EXHIBIT B

PROPOSED REMEDIAL ACTION PLAN

Waste Stream Inc.
State Superfund Project
Potsdam, St Lawrence County
Site No. 645022
February 2011

Prepared by
Division of Environmental Remediation
New York State Department of Environmental Conservation

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SECTION 1: SUMMARY AND PURPOSE OF THE PROPOSED PLAN

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), is proposing a remedy for the above referenced site. The disposal of hazardous wastes at the site has resulted in threats to public health and the environment that would be addressed by the remedy proposed by this Proposed Remedial Action Plan (PRAP). The disposal of hazardous wastes at this site, as more fully described in Section 6 of this document, has contaminated various environmental media. The proposed remedy is intended to attain the remedial action objectives identified for this site for the protection of public health and the environment. This PRAP identifies the preferred remedy, summarizes the other alternatives considered, and discusses the reasons for the preferred remedy.

The New York State Inactive Hazardous Waste Disposal Site Remedial Program (also known as the State Superfund Program) is an enforcement program, the mission of which is to identify and characterize suspected inactive hazardous waste disposal sites and to investigate and remediate those sites found to pose a significant threat to public health and environment.

The Department has issued this document in accordance with the requirements of New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York; (6 NYCRR) Part 375. This document is a summary of the information that can be found in the site-related reports and documents in the document repository identified below.

SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all PRAPs. This is an opportunity for public participation in the remedy selection process. The public is encouraged to review the reports and documents, which are available at the following repository:

Potsdam Public Library
2 Park Street
Potsdam, NY 13676
Phone: 315-265-7230

A public comment period has been set from:

02/28/2011 to 03/29/2011

A public meeting is scheduled for the following date:

March 17, 2011 at 7:00 PM

Public meeting location:

Village of Potsdam, Civic Center, Community Room, 2 Park Street, Potsdam

At the meeting, the findings of the remedial investigation (RI) and the feasibility study (FS) will be presented along with a summary of the proposed remedy. After the presentation, a question-and-answer period will be held, during which verbal or written comments may be submitted on the PRAP.

Written comments may also be sent through 03/29/2011 to:

Peter Ouderkirk
NYS Department of Environmental Conservation
Division of Environmental Remediation
317 Washington St
Watertown, NY 13601-3787
psouderk@gw.dec.state.ny.us

The Department may modify the proposed remedy or select another of the alternatives presented in this PRAP based on new information or public comments. Therefore, the public is encouraged to review and comment on the proposed remedy identified herein. Comments will be summarized and addressed in the responsiveness summary section of the Record of Decision (ROD). The ROD is the Department's final selection of the remedy for this site.

Receive Site Citizen Participation Information By Email

Please note that the Department's Division of Environmental Remediation (DER) is "going paperless" relative to citizen participation information. The ultimate goal is to distribute citizen participation information about contaminated sites electronically by way of county email listservs. Information will be distributed for all sites that are being investigated and cleaned up in a particular county under the State Superfund Program, Environmental Restoration Program, Brownfield Cleanup Program, Voluntary Cleanup Program, and Resource Conservation and Recovery Act Program. We encourage the public to sign up for one or more county listservs at http://www.dec.ny.gov/chemical/61092.html

SECTION 3: <u>SITE DESCRIPTION AND HISTORY</u>

Location: The Waste Stream Inc. is located on the west end of the Village of Potsdam in St. Lawrence County. The site is approximately 27 acres in size and is located at 147 Outer Maple

Street (NYS Rte 11).

Site Features: The main site consists of an active scrap yard, weigh station, and offices. The site also included a municipal waste transfer station which is now inactive. Drainage from the site is conveyed through several open and piped ditches which flow off-site to the east. The on-site drainage swales have been identified as the Southern Drainage Areas (SDA). Surface water from the on-site SDA passes into a 450 foot long swale that flows off-site into an 8.5 acre wetland area northeast of the site. The wetland area has been identified as the Northern Drainage Area (NDA). The wetland area eventually drains to the Raquette River, located approximately 0.6 miles to the east.

Current Zoning/Uses: The surrounding parcels are currently used for commercial and railroad rights of way. The site is zoned by the Town of Potsdam as “residential-agricultural”, occupancy classification “S” for storage as defined by the NYS Building Code. The future use of the property is considered commercial. However, the current zoning is residential-agricultural. Therefore, a restricted residential use will be considered the current and future use.

Historic Use: Currently, metal scrap is stockpiled and prepared for salvage at the site. Historically the handling, cutting and processing of scrap and machinery led to the release of fluids containing volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals and polychlorinated biphenyls (PCBs). The dismantling of hydraulic equipment and transformers were the predominant source of the PCB contamination.

Site Geology and Hydrogeology: Subsurface conditions encountered at the site consist of approximately 30 to 50 feet of overburden soils overlying sandstone and limestone bedrock. The overburden soils are identified as a poorly drained, high lime, loamy glacial material which are comprised of a variety of marine and lake silt and clay deposits. Limestone and sandstone are the principal bedrock underlying the overburden. Shallow groundwater is found at depths between 1 and 6 feet below grade. The direction of shallow groundwater flow varies across the site but the predominant flow directions are northeast and southeast. Groundwater in the deep overburden flows toward the southeast. The site does not overlie a primary or principal aquifer.

A site location map is attached as Figure 1.

SECTION 4: LAND USE AND PHYSICAL SETTING

The Department may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. For this site, alternatives (or an alternative) that restrict(s) the use of the site to restricted-residential use (which allows for commercial use and industrial use) as described in Part 375-1.8(g) is/are being evaluated in addition to an alternative which would allow for unrestricted use of the site.

A comparison of the results of the investigation to the appropriate standards, criteria and guidance values (SCGs) for the identified land use and the unrestricted use SCGs for the site contaminants is included in the Tables for the media being evaluated in Exhibit A.

SECTION 5: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

The PRPs for the site, documented to date, include:

Waste Stream, Inc

General Motors Corporation

Niagara Mohawk Power Corporation

An order on consent, Index A6-0399-9911 was issued by the Department on December 20, 2000. The order was signed by Waste Stream Inc, General Motors Corporation and Niagara Mohawk Power Corporation.

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

A Remedial Investigation (RI) has been conducted. The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. The field activities and findings of the investigation are described in the RI Report.

The following general activities are conducted during an RI:

- Research of historical information,
- Geophysical survey to determine the lateral extent of wastes,
- Test pits, soil borings, and monitoring well installations,
- Sampling of waste, surface and subsurface soils, groundwater, and soil vapor,
- Sampling of surface water and sediment,
- Ecological and Human Health Exposure Assessments.

6.1.1: Standards, Criteria, and Guidance (SCGs)

The remedy must conform to promulgated standards and criteria that are directly applicable or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, Criteria and Guidance are hereafter called SCGs.

To determine whether the contaminants identified in various media are present at levels of

concern, the data from the RI were compared to media-specific SCGs. The Department has developed SCGs for groundwater, surface water, sediments, and soil. The NYSDOH has developed SCGs for drinking water and soil vapor intrusion. The tables found in Exhibit A list the applicable SCGs in the footnotes. For a full listing of all SCGs see: http://www.dec.ny.gov/regulations/61794.html

6.1.2: RI Information

The analytical data collected on this site includes data for:

- groundwater
- surface water
- soil
- sediment

The data have identified contaminants of concern. A "contaminant of concern" is a hazardous waste that is sufficiently present in frequency and concentration in the environment to require evaluation for remedial action. Not all contaminants identified on the property are contaminants of concern. The nature and extent of contamination and environmental media requiring action are summarized in Exhibit A. Additionally, the RI Report contains a full discussion of the data. The contaminant(s) of concern identified at this site is/are:

polychlorinated biphenyls (pcb)	fluoranthene
benz(a)anthracene	phenanthrene
benzo(a)pyrene	1,2-dichloroethane
benzo(b)fluoranthene	benzene
benzo[k]fluoranthene	ethylbenzene
chrysene	vinyl chloride
indeno(1,2,3-cd)pyrene	bis(2-ethylhexyl)phthalate
toluene	naphthalene
xylene (mixed)	copper
anthracene	lead
dibenz[a,h]anthracene	mercury

As illustrated in Exhibit A, the contaminant(s) of concern exceed the applicable standards, criteria and guidance for:

- groundwater
- surface water
- soil
- sediment

6.2: Interim Remedial Measures

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before issuance of the Record of Decision.

There were no IRMs performed at this site during the RI.

6.3: Summary of Human Exposure Pathways

This human exposure assessment identifies ways in which people may be exposed to site-related contaminants. Chemicals can enter the body through three major pathways (breathing, touching or swallowing). This is referred to as *exposure*.

Persons who enter the site could contact contaminants in the soil by walking on the site, digging or otherwise disturbing the soil. People are not expected to come into direct contact with contaminated groundwater unless they dig below the ground surface. Bottled drinking water is supplied to on-site workers and groundwater is not currently used for drinking or cooking purposes, therefore exposure to contaminants in groundwater via ingestion is unlikely. Volatile organic compounds in the groundwater may move into the soil vapor (air spaces within the soil), which in turn may move into overlying buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Should the current use of the site change then an evaluation of the potential for soil vapor intrusion to occur should be completed. People may also come in contact with contaminants present in the adjacent off-site wetland sediments.

6.4: Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts may include existing and potential future exposure pathways to fish and wildlife receptors, wetlands, groundwater resources, and surface water.

The Fish and Wildlife Resources Impact Analysis (FWRIA) for OU(s) 01, which is/are included in the RI report(s), present(s) a detailed discussion of the existing and potential impacts from the site to fish and wildlife receptors.

The primary contaminants of concern at the site known at this time include VOCs, SVOCs, metals and PCBs. The past scrapping of PCB contaminated equipment has contaminated both on-site and off-site environmental media. On-site surface and subsurface soils, groundwater and sediments have been impacted by VOCs, SVOCs, metals and PCBs. On-site subsurface soils contain PCBs ranging from non-detect to 4,400 ppm. On-site soils contain arsenic, barium, cadmium, copper, lead, mercury, and zinc above both the unrestricted and restricted residential SCOs. VOCs and SVOCs have been documented in the vicinity of the former shear and tin press. On-site groundwater has been impacted by VOCs, SVOCs, metals and PCBs. The groundwater is not used as a source of potable water.

Off-site soils have been impacted by VOCs and SVOCs in the vicinity of the former tin press. Off-site sediment and surface water found in the drainage swale and Northern Drainage Areas (NDA) have been contaminated with PCBs and metals. Levels of PCBs in the sediments found off-site in the NDA range from 0.025 ppm to 3,400 ppm.

Sediments in the NDA contain levels of metals and PCBs that are known to affect the survival of benthic organisms and are known to bioaccumulate in fish and mink. This results in reduced availability of food for forage species and has a reproductive effect on fish, terrestrial wildlife, and birds. Sediments in the drainage ditch downstream of the NDA contain levels of PCBs that exceed the NYSDEC's sediment screening criteria for wildlife bioaccumulation.

Tissue sampling from fish and bullfrogs located in the NDA, the drainage swale leading to the NDA, and the drainage ditch downstream of the NDA, contain elevated levels of PCBs which indicates bioaccumulation of this contaminant is occurring.

SECTION 7: SUMMARY OF THE EVALUATION OF ALTERNATIVES

To be selected, the remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. The remedy must also attain the remedial action objectives identified for the site, which are presented in Exhibit B. Potential remedial alternatives for the Site were identified, screened and evaluated in the FS report.

A summary of the remedial alternatives that were considered for this site is presented in Exhibit C. Cost information is presented in the form of present worth, which represents the amount of money invested in the current year that would be sufficient to cover all present and future costs associated with the alternative. This enables the costs of remedial alternatives to be compared on a common basis. As a convention, a time frame of 30 years is used to evaluate present worth costs for alternatives with an indefinite duration. This does not imply that operation, maintenance, or monitoring would cease after 30 years if remediation goals are not achieved. A summary of the Remedial Alternatives Costs is included as Exhibit D.

7.1: Evaluation of Remedial Alternatives

The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375. A detailed discussion of the evaluation criteria and comparative analysis is included in the FS report.

The first two evaluation criteria are termed "threshold criteria" and must be satisfied in order for an alternative to be considered for selection.

1. Protection of Human Health and the Environment. This criterion is an overall evaluation of each alternative's ability to protect public health and the environment.

2. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether a remedy will meet environmental laws, regulations, and other standards and criteria. In addition, this criterion includes the consideration of guidance which the Department has determined to be applicable on a case-specific basis.

The next six "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

3. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on-site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the engineering and/or institutional controls intended to limit the risk, and 3) the reliability of these controls.

4. Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

5. Short-term Impacts and Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

6. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction of the remedy and the ability to monitor its effectiveness. For administrative feasibility, the availability of the necessary personnel and materials is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, institutional controls, and so forth.

7. Cost-Effectiveness. Capital costs and annual operation, maintenance, and monitoring costs are estimated for each alternative and compared on a present worth basis. Although cost-effectiveness is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the other criteria, it can be used as the basis for the final decision.

8. Land Use. When cleanup to pre-disposal conditions is determined to be infeasible, the Department may consider the current, intended, and reasonable anticipated future land use of the site and its surroundings in the selection of the soil remedy.

The final criterion, Community Acceptance, is considered a "modifying criterion" and is taken into account after evaluating those above. It is evaluated after public comments on the Proposed Remedial Action Plan have been received.

9. Community Acceptance. Concerns of the community regarding the investigation, the evaluation of alternatives, and the PRAP are evaluated. A responsiveness summary will be prepared that describes public comments received and the manner in which the Department will address the concerns raised. If the selected remedy differs significantly from the proposed remedy, notices to the public will be issued describing the differences and reasons for the changes.

7.2: Elements of the Proposed Remedy

The basis for the Department's proposed remedy is set forth at Exhibit E.

The estimated present worth cost to implement the remedy is $12,130,000. The cost to construct the remedy is estimated to be $11,180,000 and the estimated average annual cost is $94,600.

The elements of the proposed remedy are as follows:

1. A remedial design program will be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program. During the design phase, additional soil and sediment sampling will be performed to confirm the delineation during the RI regarding the horizontal and vertical extent of PCB contamination; and assumptions that inorganic contamination is located in the organic sediments of the wetland and not beneath in the glacial till. Green remediation principals and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows;

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gas and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which will otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

2. Excavation of approximately 5,000 cubic yards (CY) of soil from off-site areas that contain VOC, SVOC, PCBs and metals contamination at concentrations greater than the lower of protection of ecological resource or residential use SCOs. This soil will be consolidated on-site beneath a soil cover. The approximate limits of this excavation are shown on Figure 6.

3. Excavating approximately 5,300 CY of soil from on-site and approximately 100 CY of soil from off-site along the southern property line that contain PCBs at concentrations greater than or equal to 50 ppm. This soil will be disposed of off-site at an approved facility. The approximate limits of this excavation are shown on Figure 6.

4. Excavating approximately 4,900 CY of sediment from off-site in the northern drainage area that contain PCBs at concentrations greater than or equal to 50 ppm. This sediment will be disposed of off-site at permitted hazardous waste disposal facility. The approximate limits of this excavation are shown on Figure 7.

5. Excavating approximately 21,300 CY of sediment from both on-site (approximately 4,400 CY from the SDA) and off-site (approximately 16,400 CY from the NDA) areas that

contain PCBs at concentrations between 1 and 50 ppm. This sediment will be consolidated on-site beneath a soil cover. The approximate limits of this excavation are shown on Figure 7.

6. All on-site excavations will be backfilled with a minimum 24 inch layer of material that meets the lower of 6NYCRR 375-6.7(d) protection of ecological resource or restricted-residential criteria as applicable, for backfill. All off-site excavations will be backfilled with material that meets the lower of 6NYCRR 375-6.7(d) protection of ecological resource or residential criteria as applicable, for backfill. Excavations within 5 feet of the high groundwater elevation will be backfilled with materials that meet 6 NYCRR Part 375-6.8 SCO for the protection of groundwater. A demarcation layer will be placed at the bottom of excavated areas, as applicable.

7. A cover will be constructed over the soil and sediment that is consolidated on-site and over any remaining soil that contains contamination above the ecological resource or restricted residential SCOs, whichever is lower. The cover will be a minimum of 24 inches thick and will consist of clean soil underlain by a demarcation layer. The top six inches of soil will be of sufficient quality to support vegetation. Clean soil will constitute soil that meets the 6 NYCRR Part 375-6.8(d) criteria for backfill. Soil and sediment placed in the consolidation area must be placed at least 5 feet above the seasonally high groundwater table. Working areas, including roadways and parking lots, where soil contamination exceeds the ecological resource SCOs will be covered by either pavement or concrete that is a minimum of 6 inches thick.

8. The southern drainage areas (SDA-1 and SDA-3) will be backfilled with rip-rap stone to prevent vegetation re-establishment and discourage wildlife habitation.

9. The SDA-2 drainage swale and the Northern Drainage Area will be restored via the importation and placement of appropriate fill materials, topsoil, wetland seed mixtures, shrubs and trees in order to create a natural condition. The Design will include a restoration plan with the restoration details.

10. Existing monitoring wells will be decommissioned and new groundwater monitoring wells will be installed at locations both upgradient and downgradient from the areas of the site where dissolved phase groundwater contamination was detected during the RI to evaluate the effectiveness of the soil excavation remedy.

11. A site cover consisting of driveways, parking/staging areas and buildings currently exists and will be maintained to allow for the current use of the site. If the site is redeveloped in the future, a site-wide cover system (i.e., areas beyond those addressed by item 7 above) will be established which will consist either of structures such as buildings, pavement, sidewalks comprising the site development, or a soil cover in areas where the upper two feet of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). In areas where such a soil cover is required, it will consist of a minimum of two feet of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for restricted residential use. The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).

12. Imposition of an institutional control in the form of an environmental easement that will require (a) limiting the use and development of the property to restricted residential use, which will also permit industrial use; (b) compliance with the approved site management plan; (c) restricting the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by NYSDOH and/or the St. Lawrence County Department of Health; (d) prevention of current or future property owners from conducting activities that will potentially jeopardize the integrity of the cap; (e) periodic sampling of the water supply wells to monitor water quality, and continued supply of an alternative source of potable water to impacted parties; and (f) the property owner to complete and submit to the Department a periodic certification of institutional and engineering controls.

13. Development of a site management plan which will include the following institutional and engineering controls: (a) management of the cover system to restrict excavation below the cover's demarcation layer, pavement, or buildings; (b) excavated soil will be tested, properly handled to protect the health and safety of workers and the nearby community, and will be properly managed in a manner acceptable to the Department; (c) continued evaluation of the potential for vapor intrusion for any new buildings developed on the site, including provision for mitigation of any impacts identified; (d) periodic monitoring of groundwater, surface water, sediment and wetland vegetation and restoration efforts; (e) biennial biota monitoring that includes submitting biota samples for PCBs and lipids content; (f) identification of any use restrictions on the site; (g) fencing to control site access; and (g) provisions for the continued proper operation and maintenance of the components of the remedy.

14. The property owner will provide a periodic certification of institutional and engineering controls, prepared and submitted by a professional engineer or such other expert acceptable to the Department, until the Department notifies the property owner in writing that this certification is no longer needed. This submittal will: (a) contain certification that the institutional controls and engineering controls put in place are still in place and are either unchanged from the previous certification or are compliant with Department-approved modifications; (b) allow the Department access to the site; and (c) state that nothing has occurred that will impair the ability of the control to protect public health or the environment, or constitute a violation or failure to comply with the site management plan unless otherwise approved by the Department.

Exhibit A

Nature and Extent of Contamination

As described in the RI report, many soil, groundwater and sediment samples were collected to characterize the nature and extent of contamination. As summarized in Table 1, the main categories of contaminants that exceed their SCGs are volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs) and inorganics (metals). For comparison purposes, where applicable, SCGs are provided for each medium.

Chemical concentrations are reported in parts per billion (ppb) for water and parts per million (ppm) for waste, soil, and sediment. Air samples are reported in micrograms per cubic meter ($\mu g/m^3$). The following are the media which were investigated and a summary of the findings of the investigation.

Surface Soil (0" – 2")

Two hundred and eight (208) surface soil samples were collected for PCB analysis between June 2001 and April of 2003. PCB concentrations ranged from non-detect to 406 ppm (SB-258). PCBs were detected in 158 surface soil samples exceeding the 0.1 ppm (the SCO for unrestricted use), in 131 samples at concentrations exceeding 1 ppm (the SCO for protection of ecological resources or restricted residential use) and at 10 locations at levels exceeding 50 ppm. PCB contamination in the surface soil is widespread.

Thirty six (36) surface soil samples were collected for inorganic (metals) analysis. The concentrations of most of constituents exceed their respective SCO at least once. Cadmium, mercury, lead, zinc and copper had the highest frequencies of exceeding their respective SCO. As with PCBs, metals contamination in the surface soils is widespread.

Twenty four (24) surface soil samples were analyzed for VOC contamination. Low levels of ethylbenzene (0.002 ppm), total xylenes (0.010 ppm) and toluene (from 0.002 ppm to 0.004 ppm) were detected in 3 of the 24 samples, but all were below the unrestricted SCOs for these constituents. The VOC contamination in the surface soils is very limited.

Thirty six (36) surface soil samples were analyzed for SVOC contamination. Benzo (a) pyrene exceeded the SCO for the protection of ecological recourses of 2.6 ppm 10 out of 36 times. Benzo (a) pyrene was detected in the surface soils at levels between 0.24 ppm and 19.0 ppm. Other SVOCs were detected in exceedance of the SCO for unrestricted use, as shown in Table 1 below. SVOC contamination in the surface soils is widespread.

Two (2) surface soil samples were collected in an area of the site along the east boundary where electrical transformers were stripped and the wire insulation was burned off to salvage the copper wire. The samples were analyzed for dioxins and dibenzofuran. Results for total dibenzofurans indicate a maximum concentration of approximately 12.3 ppb, which is below the unrestricted SCO.

Table 1 – Surface Soil

Detected Constituents	Contaminant of Concern	Concentration Range Detected (ppm)	Ecological/ Restricted residential SCO[c] (ppm)	Frequency of Exceeding SCO Ecological or Restricted residential	Unrestricted SCO[b] (ppm)	Frequency of Exceeding SCO Unrestricted
SVOCs	Benzo(a)pyrene	0.041 J – 19 DJ	1	16 out of 28	1	16 out of 28
	Benzo(a)anthracene	ND – 0.50 D	1	180 out of 28	1	18 out of 28
	Benzo(b)fluoranthene	ND – 19 D J	1	22 out of 28	1	22 out of 28
	Benzo(k)fluoranthene	ND – 43	3.9	13 out of 28	0.8	18 out of 28
	Chrysene	ND – 180 J	3.9	14 out of 28	1	23 out of 28
	Dibenz(a,h)anthracene	ND – 6.7	0.33	19 out of 28	0.33	21 out of 28
	Indeno(1,2,3-cd)pyrene	ND- 19 DJ	0.5	18 out of 28	0.5	18 out of 28
Metals	Arsenic	0.87 – 31.6	13	3 out of 41	13	3 out of 41
	Barium	16.4 – 1,100	400	1 out of 41	350	1 out of 41
	Cadmium	0.12 – 13.2	4	10 out of 41	2.5	12 out of 41
	Copper	4.8 – 6870	50	23 out of 41	50	23 out of 41
	Lead	6.8 – 1,360	63	26 out of 41	63	26 out of 41
	Mercury	0.04 – 4.6	0.18	26 out of 41	0.18	26 out of 41
	Manganese	56.2 – 2,290	1,600	3 out of 41	1,600	3 out of 41
	Nickel	2.6 – 638	30	9 out of 41	30	9 out of 41
	Silver	0 - 2.2	2	1 out of 41	2	1 out of 41
	Zinc	26.8 – 2,970	109	28 out of 41	109	28 out of 41
Pesticides/ PCBs	Total PCBs	0.034 – 406	1	145 out of 208	0.1	158 out of 208

a - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;
b - SCO: Part 375-6.8(a), Unrestricted Soil Cleanup Objectives.

c - SCO: Part 375-6.8(b), Lower of either the Protection of Ecological Resources or Restricted residential Soil Cleanup Objectives

J – Estimated Quantity below Detection Limit
ND – Non Detect
D – Diluted Sample

Based on the findings of the Remedial Investigation, the past disposal of hazardous waste has resulted in the contamination of soil. The site contaminants identified in surface soil which are considered to be the primary contaminants of concern, to be addressed by the remedy selection process are SVOCs, metals and PCBs.

Subsurface Soil

A total of 216 subsurface soil samples were analyzed for PCBs during the remedial investigation from 2001 through 2003 (See Figure 4). PCB concentrations ranged from non-detect to 4,400 ppm (sample location SB-253). PCBs were detected at concentrations exceeding the unrestricted SCO of 0.1 ppm at 101 locations. PCBs were detected at concentrations exceeding the protection of groundwater SCO of 3.2 ppm at 46 locations. PCBs exceeded the 50 ppm level at 10 locations. PCBs found at 50 ppm or higher are defined as hazardous waste and require off-site disposal at a hazardous waste disposal facility. At depths of one to three feet, PCBs ranged from 1.04 ppm to 4,400 ppm; at depths between 3 to 6 feet deep, PCBs ranged from 2.93 ppm to 61.4 ppm; and at depths between 8 and 10 feet, PCBs were detected in only one sample at 2.72 ppm.

In 2002, 15 additional soil borings (1 to 3 feet in depth) were collected from sampling transects that extended across the drainage swale that flows to the Northern Drainage Area. PCB concentrations in these samples ranged from non-detect to 36 ppm (at sample T-SED-216C).

Seventy one (71) subsurface soil samples were collected for inorganic constituents including lead, with 11 samples collected for cyanide analysis. As with the surface soil samples, the concentrations of the vast majority of constituents exceed the protection of groundwater SCO at least once. Zinc, lead, mercury and copper had the highest frequencies of exceeding the protection of groundwater SCOs. Table 2 summarizes the inorganic data. Metals contamination in the subsurface soils is widespread.

Sixty nine (69) subsurface soil samples were collected and analyzed for VOC contamination. Total xylenes, toluene and acetone were detected at concentrations exceeding the protection of groundwater SCOs and ranged in concentration from 0.002 ppm to 470 ppm; 0.0012 ppm to 140 ppm; and 0.004 ppm to 310 ppm, respectively. Out of 69 samples, only xylenes were detected at concentrations above the protection of groundwater SCO in more than one sample (4 exceedances). Toluene and acetone exceedances were found in only one sample each. As with the surface soil sampling result, VOC contamination in the subsurface soils is very limited.

Sixty nine (69) subsurface soils samples were analyzed for SVOC contamination. Benzo (b) fluoranthene and chrysene were most commonly detected. Other SVOCs were detected in exceedance of the protection of groundwater SCO and the SCO for unrestricted use as shown in Table 2. The highest level of SVOC contamination was found in the area of the site where old transformers were dismantled for copper wire recovery. SVOCs were also detected along the east side of the site near the metal shearing operations. SVOC contamination subsurface soils are sporadic and largely limited to these two areas.

One (1) subsurface soil sample was collected in the area of the site along the east boundary where copper wire recovery operations were historically performed. The sample was analyzed for dioxins and dibenzofurans. Results for total dioxins and dibenzofurans indicate a maximum concentration of less than 1 ppb, below the SCO of 7 ppm.

Table 2 - Subsurface Soil

Detected Constituents	Contaminant of Concern	Concentration Range Detected (ppm)	SCO[b] (ppm) Unrestricted	Frequency of Exceeding SCO[b]	SCO[c] (ppm) Protection of GW	Frequency of Exceeding SCO[c]
VOCs	Acetone	.004 J – 310 J	0.5	1 out of 69	2.2	1 out of 69
	Toluene	.0012 J – 140 DJ	0.7	4 out of 69	36	1 out of 69
	Xylene	0.002 J – 470 DJ	0.26	4 out of 69	0.26	4 out of 69
SVOCs	Anthracene	ND – 140 JD	100		1000	
	Benzo (a) anthracene	0.27 J – 140 JD	1	6 out of 69	1	5 out of 69
	Benzo (a) pyrene	ND – 160 JD	1	5 out of 69	22	1 out of 69
	Benzo (b) fluoranthene	ND – 420 D	1	10 out of 69	1.7	9 out of 69
	Benzo (k) fluoranthene	ND – 110 JD	0.8	5 out of 69	1.7	4 out of 69
	Chrysene	ND – 480 D	1	10 out of 69	1	10 out of 69
	Dibenzo (a,h) anthracene	ND - 24	0.33	5 out of 69	1,000	0 out of 69
	Fluoranthene	ND – 860 D	100	1 out of 69	1,000	0 out of 69
	Indeno (1,2,3-cd) pyrene	ND - 72	0.5	4 out of 69	8.2	2 out of 69
	Phenanthrene	ND – 520 D	100	1 out of 69	1,000	0 out of 69
Metals	Arsenic	0.5 BJ – 30.1 J	13	2 out of 61	16	2 out of 61
	Barium	1.2 B J – 1,050	350	2 out of 61	820	0 out of 61
	Cadmium	0.16 B – 25.8 J	2.5	4 out of 61	7.5	1 out of 61
	Copper	1 B – 925	50	7 out of 61	1720	0 out of 61
	Lead	0.96 – 3,690	63	6 out of 71	450	3 out of 71

	Mercury	0.02 B – 1.7	0.18	9 out of 61	0.73	3 out of 61
	Nickel	1.1 B – 191	30	5 out of 61	130	2 out of 61
	Selenium	0.47 BJ – 4.1 J	3.9	1 out of 61	4	1 out of 61
	Zinc	5.8 – 7,680 J	109	15 out of 61	2,480	2 out of 61
Pesticides/PCBs	Total PCBs	0.02 – 4,400	0.1	101 out of 225	1	71 out of 225

a - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;
b - SCO: Part 375-6.8(a), Unrestricted Soil Cleanup Objectives.
c - SCO: Part 375-6.8(b), Protection of Groundwater Soil Cleanup Objectives.
J – Estimated Quantity below Detection Limit
B – Found in Blank
ND – Non Detect
D – Diluted Sample

Based on the findings of the RI, the past disposal of hazardous waste has resulted in the contamination of subsurface soil. The site contaminants that are considered to be the primary contaminants of concern, which will drive the remediation of subsurface soil are: SVOCs, metals and PCBs. Subsurface soil contamination identified during the RI/FS will be addressed in the remedy selection process.

Groundwater

A total of nine (9) shallow overburden monitoring wells and three (3) deep overburden monitoring wells were installed during the RI (See Figure 5). The shallow wells were installed between 12 and 14 feet deep, and the deep overburden wells were bored to refusal to the top of the bedrock surface, approximately 25 to 41 feet deep. In addition, twelve (12) temporary well points were subsequently installed in the vicinity of MW-209 to investigate petroleum related contamination detected in this monitoring well.

Total PCBs were detected at concentrations exceeding SCGs in unfiltered groundwater samples collected in three monitoring well locations located in the northern (MW-202), western (MW-204) and eastern portion of the site (MW-206). PCB levels ranged from 0.2 ppb to 1.2 ppb. Resampling of the MW-206 detected PCBs at concentration of 1.2 ppb, which is above SCGs in an unfiltered sample. A filtered sample was collected from this well and also detected total PCBs at 0.29 ppb. Unfiltered water samples were collected for PCB analysis from the two on-site water supply wells, which are not used for potable water. PCBs were not detected in either sample.

With the exception of typical mineral constituents, beryllium was the only metal detected in the overburden groundwater at a concentration exceeding SCGs. Beryllium was detected at a concentration of 3.5 ppb at MW-208.

VOCs were detected in groundwater samples from three (3) wells located in the northern (MW-203), southern (MW-204), and eastern (MW-209) portion of the site at concentrations exceeding SCGs. 1, 2-dicloroethane was detected at MW-203, and vinyl chloride was detected at MW-204, at estimated concentrations of 2.0 ppb and 8.0

ppb, respectively. Petroleum constituents related to gasoline (BTEX) including benzene, 75 ppb, toluene, 480 ppb, ethylbenzene, 180 ppb, and xylenes, 990 ppb were detected at levels exceeding SCGs at MW-209 which is located at a former underground storage tank (UST) area. Additional overburden groundwater sampling was performed downgradient of MW-209 to determine the extent of VOC contamination resulting from the former UST. No VOCs were detected in the downgradient well points. BTEX constituents were detected in TW-1 located near MW-209 in an upgradient location; benzene was detected at 4.6 ppb, toluene at 7.1 ppb, ethylbenzene at 14.0 ppb and xylenes at 9.6 ppb.

Semivolatile Organic Compounds (SVOCs) including naphthalene, bis (2-ethylhexyl) phthalate, and pentachlorophenol were detected in groundwater samples from three wells located in the eastern portion of the site at concentrations exceeding SCGs. Bis (2-ethylhexyl) phthalate was detected at MW-206 at a concentration of 89 ppb, pentachlorophenol was detected at MW-207 at 700 ppb, and naphthalene was detected at MW-209 at 39 ppb. A sample of light non-aqueous phase liquid was also obtained from MW-207 and was analyzed for Total Petroleum Hydrocarbons. This area is in the vicinity of the former tin press. Laboratory analysis indicated that the sample consisted of an unknown hydrocarbon that did not match the characteristics of fuel oil, gasoline, or lubricating oil.

Table 3 - Groundwater

	Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
VOCs	1,2-dichloroethane	2 J	0.6	1 out of 21
	Benzene	4.6 – 75 J	1	2 out of 21
	Ethylbenzene	3 J – 180 J	5	2 out of 21
	Isopropylbenzene	16 J	5	1 out of 9
	Toluene	1 J – 480 D	5	2 out of 21
	Vinyl Chloride	8 J	2	1 out of 21
	Xylene (total)	9.6 – 990 D	5	2 out of 21
SVOCs	Bis(2-ethylhexyl)phthalate	89 DJ	5	1 out of 9
	Naphthalene	39	10	1 out of 9
	Pentachlorophenol	18 J – 700	1	2 out of 10
Metals	Beryllium	3.5	0.3	1 out of 9
Pesticides/PCBs	Total PCBs	0.2 – 1.2	0.09	8 out of 17

a - ppb: parts per billion, which is equivalent to micrograms per liter, ug/L, in water.
b- SCG: Standard Criteria or Guidance - Ambient Water Quality Standards and Guidance Values (TOGs 1.1.1), 6 NYCRR Part 703, Surface water and Groundwater Quality Standards, and Part 5 of the New York State Sanitary Code (10 NYCRR Part 5).
J – Estimated Quantity below Detection Limit
D – Diluted Sample

Based on the findings of the RI, the past disposal of hazardous waste has resulted in the contamination of groundwater. The site contaminants that are considered to be the primary contaminants of concern, which will drive

the remediation of groundwater, are: VOCs, SVOCs and PCBs. These compounds have caused exceedances of the groundwater SCGs. Groundwater contamination identified during the RI/FS will be addressed by the remedy selection process.

Surface Water

Three surface water samples were taken near the site including one upgradient sample (SW-1) and two down gradient samples taken from the drainage ditch that flows to the Northern Drainage Area (SW-2, SW-3) (See Figure 4). The near down gradient samples SW-2 and SW-3 detected PCB concentrations at levels above SCGs at 0.47 ppb, and 1.05 ppb respectively. No PCBs were detected in the upgradient sample SW-1. In addition, the Department collected two surface water samples for PCB analysis in the drainage ditch downstream of the NDA (See Figure 4). Total PCBs were detected in the sample collected from the upstream portion of the drainage ditch at a concentration of 0.117 ppb. Total PCBs were also detected in the sample collected from the downstream portion of the drainage at a concentration of 0.078 ppb.

Iron and manganese were detected in each of the three near site surface water samples at concentrations exceeding SCGs. Iron was detected at 4270 ppb, 6440 ppb, and 2980 ppb at SW-1, SW-2, and SW-3, respectively. Manganese was detected at 626 ppb, 920, and 876 ppb at SW-1, SW-2, and SW-3, respectively.

VOCs were also detected at sample SW-2 at concentrations exceeding SCGs. 1, 2, 4-trichlorobenzene was detected at 6 ppb, 1, 3-dichlorobenzene at 5 ppb, and 1, 4-dichlorobenzene at 6 ppb.

No SVOCs were detected at concentrations exceeding SCGs.

Table 4 - Surface Water

	Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
VOCs	1,2,4-trichlorobenzene	3 J – 6 J	5	1 out of 6
	1,3-dichlorobenzene	2 J – 5 J	3	1 out of 6
	1,4-dichlorobenzene	3 J – 6 J	3	2 out of 6
Metals	Iron	2,980 -6,440	300	3 out of 3
	Manganese	626 – 920	300	2 out of 3
Pesticides/PCBs	Total PCBs	0.47 – 1.05	0.00012	3 out of 3

a - ppb: parts per billion, which is equivalent to micrograms per liter, ug/L, in water.
b - SCG: Ambient Water Quality Standards and Guidance Values (TOGs 1.1.1) and 6NYCRR Part 703: Surface Water and Groundwater Quality Standards.
J – Estimated Quantity below Detection Limit

Based on the findings of the Remedial Investigation, the disposal of hazardous waste has resulted in the contamination of surface water. The site contaminants that are considered to be the primary contaminants of concern which will drive the remediation of surface water to be addressed by the remedy selection process are VOCs, metals and PCBs. Surface water contamination identified during the RI/FS will be addressed in the remedy selection process in conjunction with planned remedial actions for sediment, soil and groundwater.

Sediments

Surface and subsurface sediment samples were collected at 209 locations from on-site and off-site areas during the remedial investigation and were analyzed for PCBs. PCBs were detected in 168 of the samples.

On-site sediment samples collected in the south drainage area (SDA), which is comprised of several onsite drainage swales, at SDA-1, SDA-2, and SDA-3 detected PCBs in concentrations ranging from 3.032 ppm to 47.8 ppm at 0-6" deep, and 0.334 ppm to 40.4 ppm at 6-18". PCBs were not detected in the sediment samples taken at 18"-26" deep. The results of the remedial investigation documented 59 sediment samples with total PCB concentrations ≥ 0.1 ppm; 45 samples ≥ 1.0 ppm; 11 samples ≥ 10 ppm; and 8 samples ≥ 25 ppm. No sediment samples collected in the on-site drainage areas detected PCB concentrations at 50 ppm or greater. The highest concentrations of PCBs in the on-site drainage areas were found at sample location SED-236 located in SDA-3 which had a PCB concentration of 47.8 ppm from a sample collected at 0-6" deep. With the exception of sample SED-223A located in SDA-1, which had a PCB concentration of 40.4 from a sample collected at 6-12"deep, generally the highest concentration of PCBs were detected in the surface samples from SDA-1 and SDA-3.

Off-site in the northern drainage area (NDA), PCB concentrations for 0-6" below the surface ranged from 0.025 ppm to 3,400 ppm; at 6-12" deep PCBs were detected from 0.186 ppm to 3,150 ppm; at 12-18" deep PCBs were detected from 0.043ppm to 99 ppm; and at 18-36" PCBs were detected from 0.02 ppm to 41 ppm. The remedial investigation documented 120 sediment samples with total PCB concentrations ≥ 0.1 ppm; 83 samples ≥ 1.0 ppm; 47 samples ≥ 25 ppm; 21 samples ≥ 50 ppm; 10 samples ≥ 100 ppm; and 2 samples ≥ 1,000 ppm. The highest concentrations of PCBs in sediments were found at sample location SED-221A, which is located in the drainage swale in a sediment deposition area approximately 90 feet downstream of the storm sewer outlet on the east side of the site. The sample collected at 0-6" deep at this location had a PCB concentration of 3,400 ppm, and a second sample at 6-8" deep had a PCB concentration of 3,150 ppm. Generally the highest concentrations of PCBs in sediment were detected in the drainage swale and in its outlet to the NDA.

Two off-site sediment samples were collected for PCB analysis from the drainage ditch downstream of the NDA. DDD-SED-01 was collected from the upstream portion of the ditch (Section 1) and contained an estimated concentration of 0.70 ppm, and DDD-SED-02 was collected from the downstream portion of the ditch (Section 2) and contained a total PCB concentration of 0.21 ppm.

Of the 209 sample points, sediment samples at 32 locations (on-site and off-site) and were analyzed for inorganics. Inorganic constituents were detected in 16 locations at concentrations exceeding the lowest effect levels established for metals in the NYSDEC "Technical Guidance for Screening Contaminated Sediments". Inorganic constituents were detected at 5 locations at concentrations exceeding the severe effect levels established in the NYSDEC guidance. The sediment samples that contained inorganic constituents at concentrations exceeding the severe effect levels were located in the drainage swale that flows to the northern drainage area (NDA), and in the western portion of the NDA near the outlet of the swale. Inorganic constituents were also detected at concentrations exceeding the severe effect guidance level in one sediment sample collected from the on-site drainage area SDA-1.

Of the 209 sample points, sediment samples from 19 on-site and off-site locations and were analyzed for VOCs. VOCs were not detected in any of the RI sediment samples at concentrations exceeding the NYSDEC sediment screening guidance levels.

Sediment samples from these 19 locations were also analyzed for SVOCs. Polyaromatic hydrocarbons (PAHs) were

detected at 13 sediment sampling locations at concentrations exceeding NYSDEC sediment screening criteria. PAHs were also detected at 8 sampling locations exceeding the benthic aquatic biota chronic toxicity screening levels, and at 7 sampling locations at concentrations exceeding the benthic aquatic biota acute toxicity screening levels. Similar to the results for inorganic constituents, sediment samples containing SVOCs at concentrations exceeding sediment screening criteria were located in the on-site drainage area SDA-1, in the drainage swale that flows to the NDA, and in the western portion of the NDA near the outfall of the swale.

Table 5 - Sediments

	Detected Constituents	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)	Frequency Exceeding SCG
Metals	Copper	0.73 B – 2320	16 (LEL)	10 out of 32
			110 (SEL)	7 out of 32
	Lead	0.64 B – 1,160 J	31 (LEL)	10 out of 32
			110 (SEL)	8 out of 32
	Mercury	0.03 B – 7.5	0.15 (LEL)	12 out of 32
			1.3 (SEL)	5 out of 32
Pesticides/PCBs	Total PCBs	0.025 – 3,400	0.1	153 out of 209

a - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in sediment;
b - SCG: The Department's "Technical Guidance for Screening Contaminated Sediments."
LEL – Lowest Effect Level
SEL – Severe Effect Level
J – Estimated Quantity below Detection Limit
B – Found in Blank

Based on the findings of the Remedial Investigation, the disposal of hazardous waste has resulted in the contamination of sediment. Contamination above the 1 ppm level for PCBs was found in 115 out of 209 sediment samples. The site contaminants that are considered to be the primary contaminants of concern which will drive the remediation of sediment are metals and PCBs. Sediment contamination identified during the RI/FS will be addressed in the remedy selection process.

Soil Vapor/Sub-Slab Vapor/Air

The majority of contaminants at this site consist of PCBs and metals that have very low vapor pressures and are therefore not expected to be present in soil vapor. As noted previously, VOCs are the primary contaminants of concern in one small area of the site near a former underground storage tank (in the vicinity of MW-209). The area impacted by VOCs is small and there are no inhabited buildings on top of the groundwater plume. Because of the existing nature of the contaminants at the site, the existing work practices, the open air nature of the scrap yard business, and the limited number of inhabited buildings, soil vapor sampling has not been conducted. . Remedial alternatives need to be evaluated for this medium.

Exhibit B

SUMMARY OF THE REMEDIATION OBJECTIVES

The objectives for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. The goal for the remedial program is to restore the site to pre-disposal conditions to the extent feasible. At a minimum, the remedy shall eliminate or mitigate all significant threats to public health and the environment presented by the contamination identified at the site through the proper application of scientific and engineering principles.

The remedial action objectives (RAOs) for this site are:

Groundwater

RAOs for Public Health Protection

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.
- Prevent contact with, or inhalation of volatiles, from contaminated groundwater.

RAOs for Environmental Protection

- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Prevent the discharge of contaminants to surface water.
- Remove the source of ground or surface water contamination.

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of or exposure from contaminants volatilizing from contaminants in soil

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination.
- Prevent impacts to biota from ingestion/direct contact with soil causing toxicity or impacts from bioaccumulation through the terrestrial food chain.

Surface Water

RAOs for Public Health Protection

- Prevent ingestion of water impacted by contaminants.
- Prevent contact with contaminants from impacted water bodies.
- Prevent surface water contamination which may result in fish advisories.

RAOs for Environmental Protection

- Restore surface water to ambient water quality criteria for the contaminant of concern.

- Prevent impacts to biota from ingestion/direct contact with surface water causing toxicity and impacts from bioaccumulation through the marine or aquatic food chain.

Sediment

RAOs for Public Health Protection

- Prevent direct contact with contaminated sediments
- Prevent surface water contamination which may result in fish advisories.

RAOs for Environmental Protection

- Prevent releases of contaminant(s) from sediments that would result in surface water levels in excess of (ambient water quality criteria).
- Prevent impacts to biota from ingestion/direct contact with sediments causing toxicity or impacts from bioaccumulation through the marine or aquatic food chain.
- Restore sediments to pre-release/background conditions to the extent feasible.

Exhibit C

Description of Remedial Alternatives

The following alternatives were considered based on the remedial action objectives (see Exhibit B) to address the contaminated media identified at the site as described in Exhibit A:

The following potential remedies were considered to address the contaminated soils, sediments, surface water, and groundwater at the site.

Alternative 1: No Action

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. It requires continued monitoring only, allowing the site to remain in an unremediated state. This alternative would leave the site in its present condition and would not provide any additional protection to human health or the environment.

SOILS ALTERNATIVES

Alternative S2: No Action with Institutional and Engineering Controls

Present Worth: $390,000
Capital Cost: $230,000
Annual Costs:..$13,200

This alternative would use an environmental easement and physical constraints (e.g., fencing) to limit the potential for direct contact with impacted soils by site workers, future site workers, and trespassers. Under this alternative, impacted surface and subsurface soil would remain in place and would not be subject to remedial activities. An environmental easement would be established for on-site areas to limit the potential future uses of the site and restrict current and future property owners from performing intrusive activities (e.g., excavation activities that would expose site workers to surface and subsurface soils.) The potential responsible parties (PRPs) do not currently own the adjacent property, and would obtain title to the property or negotiate with and obtain approval from the current property owners to establish institutional controls for off-site areas. In addition, the PRPs or future property owners would conduct a soil vapor intrusion investigation to evaluate potential soil vapor intrusion into any new buildings that may be constructed at the site or if the future use of the site changes.

This alternative would also include the preparation of a Site Management Plan (SMP) to:

- Provide health and safety requirements for future site activities;
- Identify known locations of site soils impacted with PCBs, SVOCs and inorganic constituents; and
- Establish inspection and maintenance and reporting requirements.

Alternative S3: Covering of Soil Containing Constituents of Concern (COCs) Greater than Either the 6NYCRR Part 375.6 Ecological Resource or Restricted residential SCOs with Removal of Soil beyond Property Boundary for Off-site Disposal or On-site Consolidation

Present Worth: $2,900,000
Capital Cost: $2,700,000
Annual Costs:...$18,000

Under this alternative a soil cover would be installed over all on-site soils containing constituents of concern (COCs) at concentrations greater than the 6NYCRR Part 375.6 ecological or restricted residential soil cleanup objectives (SCOs) whichever is lower, with the exception of VOC and SVOC contaminated soil in the vicinity of MW209. This will include soils with PCB concentrations greater than 50 ppm. The soil cover would be constructed directly on existing grade. The primary function of the soil cover would be to prevent direct exposure to impacted soils that would remain on-site.

The final design and construction materials for the soil cover would be determined during the remedial design phase. A cover will be constructed over the soil and sediment that is consolidated on-site and over any remaining soil that contains contamination above either the ecological or restricted residential SCOs, whichever is lower. The cover will be a minimum of 18 inches thick and will consist of clean soil underlain by a demarcation layer. The top six inches of soil will be of sufficient quality to support vegetation. Clean soil will constitute soil that meets the 6 NYCRR Part 375-6.8(d) criteria for backfill. Soil and sediment placed in the consolidation area must be placed at least 5 feet above the seasonally high groundwater table. Working areas, including roadways and parking lots, where soil contamination exceeds either the ecological or restricted residential SCOs, whichever is lower will be covered by either pavement or concrete that is a minimum of 6 inches thick.

The alternative would also consist of excavating off-site soils and soils within the vicinity of MW-209 that contain COCs at concentrations above either the ecological or restricted residential SCOs, whichever is lower. After confirming that soil removal objectives have been met, the excavations would be backfilled with imported soils that meets the lower of the ecological or restricted residential SCOs. Following removal, excavated soil would be segregated, and soil containing PCBs ≥ 50 ppm (approximately 100 CY) would be transported as hazardous waste off-site for proper disposal.

Soil excavated from the vicinity of MW-209, below 50 ppm total PCB levels, would be transported for off-site management as a non-hazardous waste. Following construction of the soil cover, a site management plan (SMP) would be implemented to monitor the soil cover for erosion, and to perform any needed repairs to maintain its integrity. Similar to alternative S2, an environmental easement would be placed on on-site property including contingencies for performing a SVI and implementation of a SMP for on-site and off-site areas.

Alternative S4: Excavation of Soil Containing PCBs ≥ 50 ppm with Off-site Management, Removal of Soil beyond Property Boundary, On-site Consolidation and Covering of Soil that Exceeds Either the Ecological Resource or Restricted residential SCOs

Present Worth: $4,600,000
Capital Cost: $4,400,000
Annual Costs:...$18,000

This alternative includes the excavation of on-site and off-site soil containing PCBs ≥ 50 ppm (i.e. material

considered a TSCA-regulated/New York State hazardous waste) with off-site disposal. This remedy also includes excavation of on-site and off-site soils impacted by VOC, SVOCs, metals and PCB above either the ecological resource or restricted residential SCO's, whichever is lower, followed by on-site consolidation and soil covering. Excavation activities would include removal of saturated and unsaturated soils to a depth of approximately 6 feet below ground surface. The approximate limits of soil containing PCBs at concentrations ≥50 ppm are shown on Figure 6 and include approximately 5,400 CY of PCB contaminated soil (including approximately 100 CY of soil located off-site).

This alternative would also consist of excavating approximately 5,000 CY of soil located off-site and in the vicinity of MW-209 that contain COCs at concentrations greater than either the ecological resource or restricted residential SCOs, whichever is lower. Soil excavated from off-site would be managed as described under alternative S3.

After confirming that soil cleanup objectives have been met, off-site excavation areas would be backfilled with imported soil that meets the lower of either the ecological resource or restricted residential SCOs. A soil cover would be installed on-site over remaining soils and consolidated material containing COCs at concentrations above either the ecological resource or restricted residential SCOs, whichever is lower. The soil cover would be constructed similar to alternative S3. Following construction of the soil cover, a site management plan would be implemented to monitor the soil cover for erosion, and to perform any needed repairs to maintain its integrity. Similar to alternative S2, an environmental easement would be placed on on-site property including contingencies for performing an SVI evaluation, and implementation of an SMP.

Alternative S5: Excavation of Soil Containing PCBs ≥25 ppm with Off-site Management, Removal of Soil beyond Property Boundary, On-site Consolidation and Covering of Soil that Exceeds Either the Ecological Resource or Restricted residential SCOs

Present Worth: $4,900,000
Capital Cost: $4,600,000
Annual Costs:...$18,000

This alternative would consist of removing PCB contaminated soils from on-site and off-site, consolidating that material and constructing a soil cover on-site. Both on-site and off-site soils containing PCBs at concentrations ≥ 25 ppm (i.e., 6NYCRR Part 375.6 restricted use soil cleanup objectives for industrial site use) would be excavated, staged, and transported for off-site management. The approximate limits of soil containing PCBs at concentrations ≥ 50 ppm include approximately 6,700 CY of PCB contaminated soil (including approximately 5,400 CY of soil containing PCBs at concentrations ≥ 50 ppm).

Excavation of impacted soils would be completed as described in alternatives S3 and S4. Excavated soil containing PCB concentrations greater than 25, but less than 50 ppm and soil excavated from the vicinity of MW-209 would be transported for off-site management as a non-hazardous waste. This alternative would also consist of excavating approximately 5,000 CY of soil located off-site and in the vicinity of MW-209 that contain COCs at concentrations greater than either the ecological resource or restricted residential SCOs, whichever is lower. Soil excavated from off-site would be managed as described under alternatives S3 and S4.

Soil excavated off-site that contain PCBs at concentrations less than 25 ppm and SVOC and inorganic constituents at concentrations greater than either the ecological resource or restricted residential SCOs, whichever is lower, would be consolidated on-site. Excavated areas off-site would be backfilled with imported soils that meet the lower of either the ecological resource or restricted residential SCOs. A soil cover would be installed over the remaining

soils and consolidated materials that contain COCs at concentrations greater than either the ecological resource or restricted residential SCOs, whichever is lower. Soil cover construction would be similar to alternatives S3 and S4. Similar to alternative S2, following construction of the soil cover, an environmental easement would be placed on on-site property including contingencies for performing an SVI evaluation, implementing an OM&M plan, and implementation of an SMP.

Alternative S6: Excavation of Soil Containing PCBs ≥10 ppm with Off-site Management, Removal of Soil beyond Property Boundary, On-site Consolidation and Covering of Soil that Exceeds Either the Ecological Resource or Restricted residential SCOs

Present Worth: $6,200,000
Capital Cost: $6,000,000
Annual Costs:..$18,000

This remedial alternative would consist of removing PCB-impacted soils and constructing a soil cover. Under this alternative, soils containing PCBs at concentrations greater than 10 ppm would be excavated, staged, and transported for off-site management. The approximate limits of soil containing PCBs at concentrations greater than 10 ppm include approximately 14,200 CY of PCB-impacted soils (including 5,400 CY of soil containing PCBs at concentrations greater than or equal to 50 ppm). Excavation of impacted soil would be completed as described under the other soil alternatives.

Excavated soil containing PCB concentrations greater than 10 ppm, but less than 50 ppm and soil excavated from the vicinity of MW-209 would be transported for off-site management as a non-hazardous waste. On-site areas may be backfilled with off-site soils containing less than 10 ppm PCBs and SVOCs and inorganic constituents at concentrations greater than either the ecological resource or restricted residential SCOs, whichever is lower. Off-site excavation areas would be backfilled with imported soil that would meet the lower of either the ecological resource or restricted residential SCOs. A soil cover would be installed over the remaining soils and consolidated materials that contain COCs at concentrations greater than either the ecological resource or restricted residential SCOs, whichever is lower. Soil cover construction would be similar to the other soil alternatives. Following construction of the soil cover, an environmental easement would be placed on on-site property including contingencies for performing an SVI evaluation, implementing an OM&M plan, and implementation of a SMP.

Alternative S7: Excavation of Soil Containing COCs > 6NYCRR Part 375.6 Ecological Resource or Restricted residential SCOs, Whichever is Lower with Off-site Management

Present Worth: $18,400,000
Capital Cost: $18,400,000
Annual Costs:..$0

This remedial alternative would consist of excavating soils containing COCs at concentrations exceeding the 6NYCRR Part 375.6 ecological resource or restricted residential SCOs, whichever is lower. The approximate limit of soil containing COCs at concentrations exceeding the unrestricted use SCOs include approximately 90,800 CY of impacted soil (including 5,400 CY of soil containing PCBs at concentrations equal to or greater than 50 ppm). Excavated soil would be staged and transported for off-site management. After confirming that the soil removal objectives have been met, the excavations would be backfilled with clean imported general fill material, meeting unrestricted SCOs, to pre-existing grade. Excavation of impacted soils would be completed as described for the other soil alternatives.

Unlike the other alternatives, construction of a soil cover and implementation of long-term soil cover maintenance and monitoring plan would not be needed. However, an on-site environmental easement may be necessary to implement an SVI evaluation if groundwater contamination remains.

GROUNDWATER ALTERNATIVES

Alternative GW-1: No Action

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. It requires continued monitoring only, allowing the site to remain in an unremediated state. This alternative would leave the site in its present condition and would not provide any additional protection to human health or the environment.

Alternative GW2: Institutional Controls

Present Worth: $135,000
Capital Cost: $60,000
Annual Costs:...$6,000

Under this alternative, institutional controls would consist of an environmental easement that would require: appropriate signs and warning labels to deter site workers or visitors from using site water for potable purposes, continued supply of bottled water for drinking, and restrictions to mitigate ingestion of and/or direct contact by site workers with groundwater containing VOCs at concentrations greater than NYSDEC Class GA standards and guidance values.

Neither groundwater nor surface water is used for potable purposes at the site. However, two on-site water wells currently provide sanitary water and water for hand washing (i.e., non-potable water). The site groundwater would be allowed to remain in its current condition, and no active effort would be made to change the current conditions. Sampling of the water supply wells to monitor water quality would continue until the NYSDEC determines monitoring is no longer needed. Under the environmental easement, periodic inspections of institutional controls and submittal of notifications would be required to verify that the institutional controls are being maintained and remain effective.

Alternative GW3: Long Term Monitoring

Present Worth: $530,000
Capital Cost: $180,000
Annual Costs:...$28,600

This remedial alternative would consist of conducting groundwater monitoring and establishing institutional controls (as described under alternative GW2) and is conditioned on the implementation of a chosen soil alternative. This alternative would require that existing groundwater monitoring wells be abandoned/decommissioned prior to any soil excavation activities and a new monitoring well network would be installed at locations both upgradient and downgradient from areas at the site where dissolved-phase COCs were detected during the RI.

The results of the monitoring activities would be summarized and presented in an annual report to document the potential reduction in COC concentrations as a result of natural attenuation (e.g., biodegradation, dispersion,

sorption, volatilization, etc.) occurring at the site.

Neither groundwater nor surface water is used for potable purposes at the site. However, two on-site water wells currently provide sanitary water and water for hand washing (i.e., non-potable water). Continued sampling of the water supply wells to monitor water quality would be required until the NYSDEC determines monitoring is no longer needed. Currently, there is not an alternative water supply available to the site (e.g. municipal supply). Bottled water is supplied for potable purposes. If an alternative water supply becomes available, the on-site water supply wells would be abandoned.

Alternative GW4: Chemical Oxidation of Dissolved Phase VOCs

Present Worth: $720,000
Capital Cost: $363,000
Annual Costs:..$28,600

This alternative would consist of the in-situ chemical oxidation of dissolved-phase VOCs in the overburden groundwater northwest of the main office building (near monitoring well MW-209), and establishing institutional controls similar to alternatives GW2 and GW3.

Neither groundwater nor surface water is used for potable purposes at the site. However, two on-site water wells currently provide sanitary water and water for hand washing (i.e., non-potable water). Continued sampling of the water supply wells to monitor water quality would be required until the NYSDEC determines monitoring is no longer needed. Currently, there is not an alternative water supply available to the site (e.g., municipal supply). Bottled water is supplied for potable purposes. If an alternative water supply becomes available, the on-site water supply wells would be abandoned.

In-situ chemical oxidation is a remedial technology that involves the introduction of oxidizing agents (e.g., persulfate, zero-valent iron, oxygen releasing compounds, etc.) into the subsurface to degrade BTEX compounds and PAHs to less-toxic byproducts. Under this alternative, the oxidizing agent would be delivered in one-time or pulsed applications (via air/gas mixtures or water suspensions) to the impacted groundwater in the immediate vicinity of monitoring well MW-209. Security fencing would be installed in the vicinity of the application area to prevent access by unauthorized personnel.

Similar to alternative GW3, this alternative would require that existing monitoring wells be abandoned/decommissioned prior to any soil excavation activities conducted pursuant to the selected remedy for soil and sediment and a new monitoring well network would be installed at locations both upgradient and down gradient from areas at the site where dissolved-phase COCs were detected during the RI. Following oxidant application, groundwater monitoring would be conducted on a quarterly basis for the first year and then periodically until the NYSDEC determines monitoring is no longer needed. The results of the monitoring activities would be summarized and presented in a periodic report to document the potential reduction in COC concentrations as a result of the in-situ chemical oxidation groundwater treatment.

SEDIMENT ALTERNATIVES

Alternative SD2: Engineering Controls

Present Worth: $135,000

Capital Cost: $60,000
Annual Costs:...$6,000

Under alternative SD2, no active remediation would be implemented to remove, treat, or contain impacted sediment in the southern drainage areas, the drainage swale that conveys surface water or storm water runoff to the northern drainage area (NDA), and sediment within the NDA itself. This alternative would require an environmental easement (with approval from the current NDA property owner) to mitigate direct contact with impacted sediment by site workers, visitors and trespassers. Under this alternative, an environmental easement would be established to restrict current and future property owners from performing intrusive activities that may result in exposure to PCB-impacted sediments.

The NDA and portions of the drainage swale are not currently owned by the remedial party. Approval from the currently property owners would be required to place and environmental easement on the off-site portion of this remedial alternative.

Additionally, fencing would be installed around the perimeter of the NDA to limit site access by unauthorized personnel and surrounding wildlife. This alternative would also include preparation of a Site Management Plan (SMP) that would:

- Provide health and safety requirements for future site activities;
- Identify known locations of site sediments impacted with PCBs, SVOCs and inorganic constituents;
- Establish inspection, maintenance and reporting requirements.

Site fencing maintenance activities would be completed in accordance with the SMP. Additionally, periodic reports would be submitted to document that institutional controls and site fencing are maintained and remain effective.

Alternative SD3: Average Based Sediment Removal to Achieve PCB Concentrations <1ppm with On-site Consolidation and Off-site Management and Long Term Biota Monitoring

Present Worth: $5,700,000
Capital Cost: $5,300,000
Annual Costs (First 5 yrs.):...$66,000
Annual Costs (Remaining 25 yrs.):..$48,000

This alternative would consist of excavating sediment to achieve an average PCB concentration in sediment of less than a 1 ppm site-specific sediment cleanup objective. All of the sediments in southern drainage areas (SDA) 1 and 2, and the off-site drainage swale would be excavated to achieve PCB concentrations in the sediments of less than 1 ppm. In SDA-3 and the NDA, a portion of PCB contaminated sediments would be excavated to achieve an average PCB concentration in each individual area of less than 1 ppm. This alternative would leave areas in SDA-3 and the NDA with sediments containing PCB concentrations above 1 ppm in place. The range of PCB concentrations remaining in SDA-3 is estimated to be 0.01 to 8.8 ppm, and the range in the NDA is estimated to be 0.01 to 9.3 ppm.

Sediment excavation activities would be completed using conventional construction equipment. Temporary earthen berms, diversion ditches, and/or temporary bypass pumping would be used to facilitate dewatering of the wetland

areas.

Stabilized/dewatered sediment containing PCB concentrations greater than or equal to 50 ppm (approximately 4,900 CY) would be segregated and transported for off-site management as a TSCA-regulated New York State hazardous waste at a RCRA subtitle C landfill. Stabilized/dewatered sediment containing PCB concentrations less than 50 ppm would be transported for off-site management as a non-hazardous waste and consolidated prior to soil covering as part of the selected soil remedial alternative. Sediment stabilization would consist of the addition of an appropriate stabilizing agent (e.g., woodchips, Portland cement, dry soil, etc.) so that no free liquids are present.

Sediment that does not contain COCs at concentrations greater than the soil cleanup objectives would be consolidated on-site with soil excavated from off-site and used as backfill for the on-site excavation areas. If the volume of consolidated sediment and soil is greater than the volume of soil excavated from on-site, the remainder of the material would be evenly distributed on-site within the limits of the area to be covered. Following on-site consolidation, the materials would be covered as described in alternative S3 through S6.

Following excavation activities, wetlands would be restored. The topography of the existing NDA would be restored via the importation and placement of appropriate fill material (to be determined during remedial design) and a surface layer of 6 inches of topsoil. Fill material and wetland topsoil would consist of materials that would closely match the physical characteristics of the existing wetland materials to maintain the hydraulic interaction of the water table and the wetlands. Existing wetland habitats would be restored with wetland seed mixtures, shrubs, and trees that best match post-excavation hydraulic conditions.

Southern drainage area wetlands would be backfilled with materials (i.e., riprap stone, instead of general fill, topsoil, and vegetation not suitable for vegetation re-establishment or wildlife habitat) to discourage wildlife habitation. The portion of existing drainage culvert running east-west through the site is acting as a groundwater drain, and will be replaced with a covered perforated drain pipe to minimize potential changes to site hydrogeology.

A wetland vegetation restoration plan, including existing soil characterization, would be developed prior to the implementation of the remedial activities. Additionally, a wetland and biota monitoring plan would be prepared and implemented following the completion of the remedial activities. Biota monitoring would include collecting samples (e.g., fish, frogs, etc.) for laboratory analysis for PCBs and lipids content. Lab results would be utilized to access the effectiveness of the remedial action. This alternative would also include preparation of a Site Management Plan (SMP) that would:

- Provide health and safety requirements for future site activities; and
- Establish inspection, maintenance and reporting requirements.

Alternative SD4: Area-Based Sediment Removal (PCBs >1 ppm) with On-site Consolidation and Off-site Management and Long Term Biota Monitoring

Present Worth: $7,000,000
Capital Cost: $6,400,000
Annual Costs (First 5 yrs.):...$66,000
Annual Costs (Remaining 25 yrs.):..$48,000

This remedial alternative would consist of excavating sediment containing PCBs at concentrations greater than 1 ppm. This includes sediment located within the southern drainage areas (SDA), the drainage swale that flows to the northern drainage area (NDA), and the NDA itself. The approximate limits of sediment containing PCBs at concentrations greater than 1 ppm (approximately 21,300 CY) are shown on Figure 7.

Sediment excavation, handling, stabilization/dewatering, and waste characterization activities would be completed as described in alternative SD3. Water generated during excavation and dewatering activities would be treated (i.e., solids removal followed by activated carbon filtration) via an on-site temporary treatment system and subsequently discharged back into the NDA. Stabilized/dewatered sediment containing PCBs at concentrations greater than or equal to 50 ppm (approximately 4,900 CY) would be segregated for transportation and off-site management as a TSCA-regulated/New York State hazardous waste as a RCRA Subtitle C landfill. Stabilized/dewatered sediment containing PCBs at concentrations less than 50 ppm would be transported off-site as a non-hazardous waste or be consolidated on-site prior to soil covering as part of the selected soil remedial alternative. Similar to alternative SD3, the excavated sediment may be consolidated with soil excavated from off-site. If the volume of consolidated sediment and soil is greater than the volume of soil excavated from on-site, the remainder of the material would be evenly distributed across the site within the limits to be covered.

Following excavation activities, site wetlands would be restored as described in alternative SD3.

A wetland vegetation restoration plan, including existing soil characterization, would be developed prior to the implementation of the remedial activities. Additionally, a wetland and biota monitoring plan would be prepared and implemented following the completion of the remedial activities. Biota monitoring would include collecting samples (e.g., fish, frogs, etc.) for laboratory analysis for PCBs and lipids content. Lab results would be utilized to access the effectiveness of the remedial action. A detailed biota monitoring plan would be developed as part of the remedial design. This alternative would also include preparation of a Site Management Plan (SMP) that would:

- Provide health and safety requirements for future site activities; and
- Establish inspection, maintenance and reporting requirements.

Alternative SD5: Area-Based Sediment Removal (PCBs >0.1 ppm) with Off-site Management and Long Term Biota Monitoring

Present Worth: $11,800,000
Capital Cost: $11,400,000
Annual Costs (First 5 yrs.):...$66,000
Annual Costs (Remaining 25 yrs.):...$48,000

This remedial alternative would consist of excavating sediment containing PCB at concentrations greater than 0.1 ppm site-specific sediment cleanup objective. This includes sediment located within the southern drainage areas, the drainage swale, and the NDA. The approximate volume of sediment containing PCBs at concentrations greater than 0.1 ppm is approximately 37,800 CY.

Sediment excavation, handling, stabilization/dewatering, and waste characterization activities would be completed as described in the previous sediment alternatives. Stabilized/dewatered sediment containing PCB concentrations equal to or greater than 50 ppm (approximately 4,900 CY) would be segregated for transportation and off-site management as a TSCA-regulated/New York State hazardous waste at a RCRA Subtitle C landfill.

Stabilized/dewatered sediment containing PCBs at a concentration less than 50 ppm would be transported for off-site management as a non-hazardous waste.

Following excavation activities, site wetlands would be restored as described in other sediment alternatives.

A wetland vegetation restoration plan, including existing soil characterization, would be developed prior to the implementation of the remedial activities. Additionally, a wetland and biota monitoring plan would be prepared and implemented following the completion of the remedial activities. Biota monitoring would include collecting samples (e.g. fish, frogs, etc.) for laboratory analysis for PCBs and lipids content. Lab results would be utilized to access the effectiveness of the remedial action. A detailed biota monitoring plan would be developed as part of the remedial design. This alternative would also include preparation of a Site Management Plan (SMP) that would:

- Provide health and safety requirements for future site activities; and
- Establish inspection, maintenance and reporting requirements.

Alternative SD6: Excavation of Sediment (PCBs ≥ 50 ppm) with Off-site Management; Soil covering In-Place; Wetland Replacement; and Long Term Biota Monitoring

Present Worth: $3,900,000
Capital Cost: $3,500,000
Annual Costs (First 5 yrs.):...$66,000
Annual Costs (Remaining 25 yrs.):..$48,000

This remedial alternative would consist of excavating sediment containing PCBs at concentrations greater than or equal to 50 ppm including sediment located within the southern drainage areas (SDA), the drainage swale that flows to the northern drainage area (NDA), and the NDA itself. The volume of sediment containing PCBs at concentrations greater than 50 ppm is approximately 4,900 cubic yards.

Sediment excavation, handling, stabilization/dewatering, and waste characterization activities would be completed as described in the previous sediment alternatives. Stabilized/dewatered sediment containing PCB concentrations equal to or greater than 50 ppm would be transported for off-site management as a TSCA-regulated/New York State hazardous waste at a RCRA Subtitle C landfill. Remaining sediment in the SDA, drainage swale and NDA would be covered in place.

The soil cover would be constructed directly on existing grade. Approximately 4.4 acres of impacted sediments in the NDA would be covered. The approximate extent of the proposed soil cover is shown on Figure 6. The primary function of the cover would be to prevent direct exposure to impacted sediments that would remain on-site. A cover will be constructed over the soil and sediment that is consolidated on-site and over any remaining soil that contains contamination above the either the ecological resource or restricted residential SCOs, whichever is lower. The cover will be a minimum of 18 inches thick and will consist of clean soil underlain by a demarcation layer. The top six inches of soil will be of sufficient quality to support vegetation. Clean soil will constitute soil that meets the 6 NYCRR Part 375-6.8(d) criteria for backfill. Soil and sediment placed in the consolidation area must be placed at least 5 feet above the seasonally high groundwater table. Working areas, including roadways and parking lots, where soil contamination exceeds either the ecological resource or restricted residential SCOs, will be covered by either pavement or concrete that is a minimum of 6 inches thick.

Following excavation activities a new drainage swale would be constructed to route surface water runoff around the covered sediments in the NDA. In addition, approximately 3.0 acres of additional wetland would be created to compensate for the wetlands lost in the NDA due topsoil covering.

A wetland vegetation restoration plan, including existing soil characterization, would be developed prior to the implementation of the remedial activities. Additionally, a wetland and biota monitoring plan would be prepared and implemented following the completion of the remedial activities. Biota monitoring would include collecting samples (e.g., fish, frogs, etc.) for laboratory analysis for PCBs and lipids content. Lab results would be utilized to access the effectiveness of the remedial action. A detailed biota monitoring plan would be developed as part of the remedial design. This alternative would also include preparation of a Site Management Plan (SMP) that would:

- Provide health and safety requirements for future site activities; and
- Establish inspection, maintenance and reporting requirements.

Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
S-1 No Action	0	0	0
S-2 No Action with Institutional Controls	230,000	13,200	390,000
S-3 Soil covering of Soil Containing Constituents of Concern (COCs) Greater Than 6NYCRR Part 375.6 Ecological Resource or Restricted residential SCOs with Removal of Soil Beyond Property Boundary	2,700,000	18,000	2,900,000
S-4 Excavation of Soil Containing PCBs ≥50 ppm with Off-site management, Removal of Soil Beyond Property Boundary, On-site Consolidation and Soil Covering	4,400,000	18,000	4,600,000
S-5 Excavation of Soil Containing PCBs ≥25 ppm with Off-site management, Removal of Soil Beyond Property Boundary, On-site Consolidation and Soil Covering	4,600,000	18,000	4,900,000
S-6 Excavation of Soil Containing PCBs ≥10 ppm with Off-site Management, Removal of Soil Beyond Property Boundary, On-site Consolidation and Soil Covering	6,000,000	18,000	6,200,000
S-7 Excavation of Soil Containing COCs > 6NYCRR Part	18,400,000	0	18,400,000

375.6 Ecological Resource or Restricted residential SCOs, with Off-site Management			
GW-1 No Action	0	0	0
GW-2 Institutional Controls	60,000	6,000	135,000
GW-3 Long Term Monitoring	180,000	28,600	530,000
GW-4 Chemical Oxidation of Dissolved Phase VOCs	363,000	28,600	720,000
SD-1 No Action	0	0	0
SD-2 Institutional Controls	60,000	6,000	135,000
SD-3 On-site vs. Off-site Disposal Average Based Sediment Removal to Achieve PCB Concentrations <1ppm with On-site Consolidation and Off-site Management and Long Term Biota Monitoring	5,300,000 to 6,000,000	66,000 –Yr 1-5 48,000 - Yr 5-30	5,700,000 to 6,400,000
SD-4 On-site vs Off-site Disposal Area-Based Sediment Removal (PCBs >1 ppm) with On-site Consolidation and Off-site Management and Long Term Biota Monitoring	6,400,000 to 7,200,000	66,000 –Yr 1-5 48,000 - Yr 5-30	7,000,000 to 7,600,000
SD-5 Area-Based Sediment Removal (PCBs >0.1 ppm) with Off-site Management and Long Term Biota Monitoring	11,400,000	66,000 –Yr 1-5 48,000 - Yr 5-30	11,800,000
SD-6 Excavation of Sediment (PCBs ≥ 50 ppm) with Off-site Management; Soil Covering In-Place; Wetland Replacement; and Long Term Biota Monitoring	3,500,000	66,000 –Yr 1-5 48,000 - Yr 5-30	3,900,000

Exhibit E

SUMMARY OF THE PROPOSED REMEDY

The Department is proposing Alternatives, S4 (Excavation of Soil Containing PCBs ≥50 ppm with Off-site management, Removal of Soil beyond Property Boundary, On-site Consolidation and Soil Covering), GW3 (Long Term Monitoring) and SD4 (Area-Based Sediment Removal (PCBs >1 ppm) with On-site Consolidation and Off-site Management and Long Term Biota Monitoring) as the remedy for this site.

Basis for Selection

The proposed remedy is based on the results of the RI and the evaluation of alternatives.

Alternatives S4 (Excavation of Soil Containing PCBs ≥50 ppm with Off-site management, Removal of Soil Beyond Property Boundary, On-site Consolidation and Soil Covering), GW3 (Long Term Monitoring) and SD4 (Area-Based Sediment Removal (PCBs >1 ppm) with On-site Consolidation and Off-site Management and Long Term Biota Monitoring) are being proposed because, as described below, they satisfy the threshold criteria and provide the best balance of the primary balancing criteria described in Section 7.2. The following is a discussion, segregated by media, of how each alternative would achieve the remediation goals for the site.

Soils Alternatives

While S3, S4 (Excavation of Soil Containing PCBs ≥50 ppm with off-site management, Removal of Soil Beyond Property Boundary, On-site Consolidation and Soil Covering), S5, S6 and S7 would all meet the threshold criteria of protection to human health and the environment, S2 would not because the ecological resources and restricted residential SCOs would not be obtained. S2 would only implement institution controls and would not eliminate direct long-term exposure of site workers to impacted soils, or migration of impacted soils to the wetlands in the northern drainage area due to surface water runoff, and therefore was not considered further.

Remedial alternative S7 would create the most short term impacts due to the larger volume of impacted soil that would be excavated for off-site disposal. Alternative S3 would create the fewest short term impacts of the excavation alternatives, however, would leave impacted soils on-site creating the potential of long-term impacts to the groundwater. While alternatives S4, S5, and S6, would remove impacted soils to various degrees, thus reducing impacts to the groundwater, alternative S4 would create the least short term impacts of these three alternatives.

Long-term Effectiveness and Permanence would be best met by alternative S7 since this alternative requires a removal of all impacted soils for off-site disposal. Alternative S3 would provide the least long-term effectiveness since impacted soils with PCB concentrations above that considered as hazardous waste would be left on-site. Of the alternatives S6, S5, and S4, alternative S6 would be more effective in the long term because more contaminant mass would be removed for off-site disposal. S5 and S4 are also effective in removing contaminant mass but to a lesser degree, with S4 being the most implementable. The level of environmental risk using S4 would be mitigated by the proposed soil cover, and institutional controls. Based on groundwater sampling results during the RI, impacts to the groundwater have been minimal in isolated, on-site locations. Alternative S4 would remove impacted soils containing the highest concentrations of contamination, providing a level of mitigation for the impacted groundwater, and leaving residual contamination at levels acceptable for the proposed use of the site. Exposure to on-site workers and public health from impacted soils left on-site would be mitigated by engineering controls and by using institutional controls to restrict the use of the site to a restricted residential (which would also allow for

commercial or industrial use, based on zoning requirements).

Under alternatives S4, S5 and S6 soils would be removed off-site at varying levels for proper disposal. These alternatives would reduce the toxicity of the contaminants found on-site. Alternative S7 would provide for the most reduction of volume by removing the most volume of impacted soils. S3 would remove off-site impacted soils but leave on-site impacted soils in place under a soil cover, and therefore is only slightly effective in meeting this remedial action objective. Alternatives S4, S5 and S6 would provide for a reduction in the volume of impacted soils to varying degrees, with S6 being the most effective. However the difference between the three alternatives is less significant when considering the institutional and engineering controls that would be required for each alternative and the site use restrictions that would be implemented.

While alternative S3 would be considered the most implementable due to the least amount of impacted soils being excavated, S4, S5, and S6 are also considered implementable based on the current excavation and soil covering techniques. Alternative S7 would be the most difficult to implement due to the large quantity of impacted soils and sediments required to be excavated and transported for off-site disposal.

Capital costs between alternatives increase as more impacted soils are excavated. While S3 is the least expensive, it provides the least effectiveness, and the least reduction in the volume of impacted soils. S7 is the most expensive alternative but is not readily implementable. The difference in cost between S4 and S5 is insignificant and both alternatives have the same O&M costs. S6 has a higher capital cost than S4 and S5 but has the same O&M cost. Of the three alternatives S4, S5 and S6, S4 is more easily implemented.

Based on the above discussion, the proposed alternative to address contaminated soil on-site and off-site is Alternative S4. This alternative provides the best balance of the criteria and includes the excavation of on-site and off-site soil containing PCBs ≥50 ppm with off-site management and removal of on-site and off-site soils impacted by VOC, SVOCs, metals and PCB above either the ecological resource or restricted residential SCO's, whichever is lower, followed by on-site consolidation and soil covering.

Groundwater Alternatives

GW3 (Long Term Monitoring), and GW4 would meet the threshold criteria of protection to human health and the environment, however, GW2 would not. GW2 would implement institutional controls only and not provide the monitoring needed to determine if the remedial action objectives were being met. Therefore GW-2 was not considered further as a viable alternative.

Both GW3 and GW4 would have minimal short term impacts; however GW3 has fewer impacts due to the fact that no on-site work would be needed at MW-209 for implementation of chemical oxidation mitigation system.

GW4 would provide long-term effectiveness by mitigating the impacted groundwater at MW-209 using an in-situ chemical oxidation treatment system. However, with contaminated soil source removal in the vicinity of MW-209 as proposed under the remedial alternatives for soil, an in-situ treatment for soil contamination would not be needed, as contaminant concentrations at MW-209 should start to attenuate within a year. GW3 would provide long-term monitoring to document the mitigation of the groundwater.

By implementing an in-situ chemical oxidation treatment system, GW4 would reduce the toxicity, and mobility of the contaminants in the soils at MW-209. GW3 does not provide for treatment, however, in combination with soil alternative S4, the contaminated soils would be removed, and a corresponding reduction in groundwater

contamination would be realized. GW3 would provide long-term monitoring to document the mitigation of the groundwater.

Of alternatives GW3 and GW4, GW3 would be the most implementable since the time and effort to implement an in-situ chemical oxidation treatment system would not be needed.

The capital cost for GW3 is approximately half as expensive as GW4, and O&M costs are roughly the same.

Based on the above discussion, the proposed alternative to address contaminated groundwater is Alternative GW3. Alternative GW3 best satisfies the selection criteria and is proposed based on the proposed removal of contaminated source material that is impacting on-site and off-site groundwater. Alternative GW3 includes the development of groundwater monitoring well program to evaluate the effectiveness of the removal program and the long-term soil covering and control system for on-site consolidated soils.

Sediment Alternatives

SD4 (Area-Based Sediment Removal (PCBs >1 ppm), and SD5 meet the threshold criteria of protection to human health and the environment, however, SD2, and SD3 would not. SD2 would only implement institution controls and would not eliminate direct long-term exposure of wetlands biota to impacted sediment, therefore it is not considered protective of the environment, would not meet SCGs, and was not considered further. SD3 would use an averaging method to determine the PCB concentrations remaining after excavation, and therefore would leave PCB concentrations in the wetlands that exceed the Department's SCGs and would not eliminate long-term exposure of wetlands biota to impacted sediment. Because of this, SD3 was also not considered further.

SD4, SD5, and SD6 would all create short term impacts to varying degrees due to the volume of sediment removal needed, and remediation impacts to the wetlands in the northern drainage area. Of the three alternatives, SD6 would create the most short term impacts due to the combination of excavation of contaminated sediments, and disturbance due to recreating a new wetland area. SD5 would remove the most sediment, and would require a longer time frame for excavation of the impacted sediments. However, SD5 would not require any on-site disposal. SD4 would require on-site disposal thus creating more short term impacts on-site than SD5. However SD4 would create fewer impacts to the wetlands area due to the smaller excavation volume and smaller area of wetlands impacted by the excavation.

SD6 would provide the least long-term effectiveness and permanence by leaving the largest volume of contaminated sediments with PCB concentrations above SGCs underneath a soil cover. SD5 would provide an incremental increase in long-term effectiveness and permanence when compared to SD4 by removing more contaminant mass, however it would also create more disturbance and impact to the wetlands.

Of the three alternatives being considered, SD6 would provide the least reduction in volume of contaminant mass removed. SD5 would provide the largest reduction in volume by removing the most contaminated sediment for off-site disposal. However SD4 would also remove a significant volume of PCB contaminated sediment, and would be considered protective while limiting the remedial impacts to the wetlands. SD4 would also provide for a reduction in the mobility of the contaminants by soil covering sediments with PCB concentrations less than 50 ppm in an on-site containment cell.

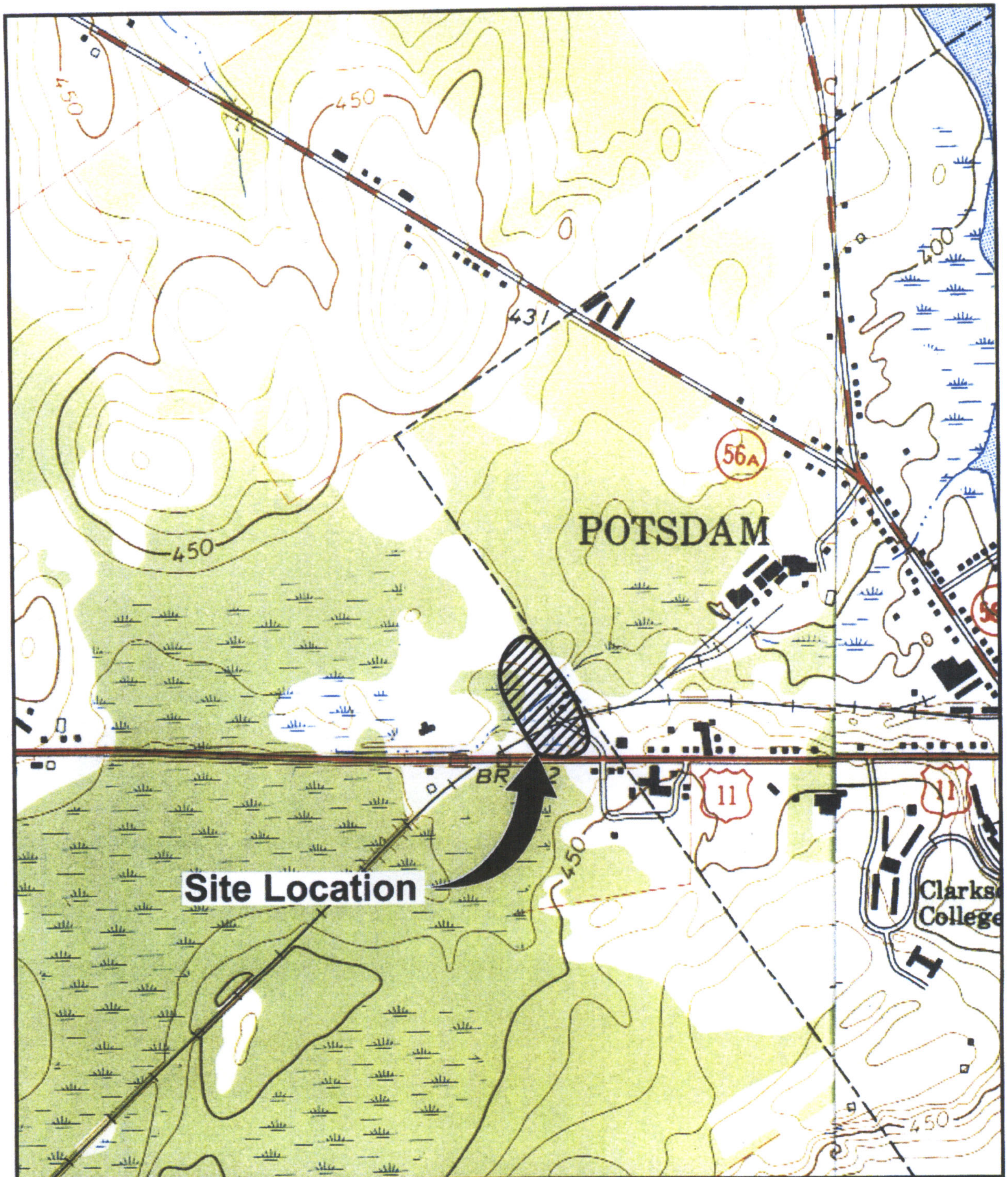
Given the physical nature of the wetland materials, alternative SD6 would be difficult to implement due to the sporadic areas of excavation. In addition, by not removing the entire mass of contamination, cross contamination

from area to area is likely to occur. The re-creation of replacement wetlands in upland areas is considered the least desirable in this case since the removal of the contaminated sediments is not technically infeasible. SD5 is considered to be more difficult to implement that SD4 due to the larger quantity of contaminated sediments that would be required for removal due to the lower sediment cleanup objective of 0.1 ppm. SD4's cleanup objective of 1.0 ppm is more readily achievable and would provide protectiveness to human health and the environment.

Of the three alternatives the capital cost for SD6 is estimated to be the lowest. However, due to uncertainties in the cost estimate including the amount of replacement wetlands required, equipment decontamination, contaminated sediment grading, and volume of material removal for the replacement wetlands, the capital cost is expected to be significantly higher. The capital cost for SD4 is approximately half of SD5, and the long-term operations and maintenance costs for wetlands restoration and monitoring are the same.

Based on the above discussion, the proposed alternative to address on-site and off-site contaminated sediment is Alternative SD4. Alternative SD4 provides the best balance of the selection criteria and is proposed based on the proposed removal of contaminated sediments on-site and off-site which will achieve the SCOs for ecological resources and restricted residential use. The removal of the PCB contaminated sediments will also remove the SVOC and metal contamination found in the sediments.

The estimated present worth cost to implement the remedy (Alternative S4, Alternative SD4 and Alternative GW3) is $12,130,000. The cost to construct the remedy is estimated to be $11,180,000 and the estimated average annual costs for the first 5 years is $112,600, and for the next 25 years is $94,600.



REFERENCE: BASE MAP SOURCE USGS 7.5 MINUTE QUAD. SERIES WEST POTSDAM AND POTSDAM, NEW YORK 1964.

1000' 0 1000'

Approximate Scale: 1" = 1000'

AREA LOCATION

WASTE-STREAM INC.
POTSDAM, NEW YORK

FOCUSED REMEDIAL INVESTIGATION

SITE LOCATION MAP

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

FIGURE
1

04/09/02 SYR-54-MRC, DJH
31005009/31005n05.CDR

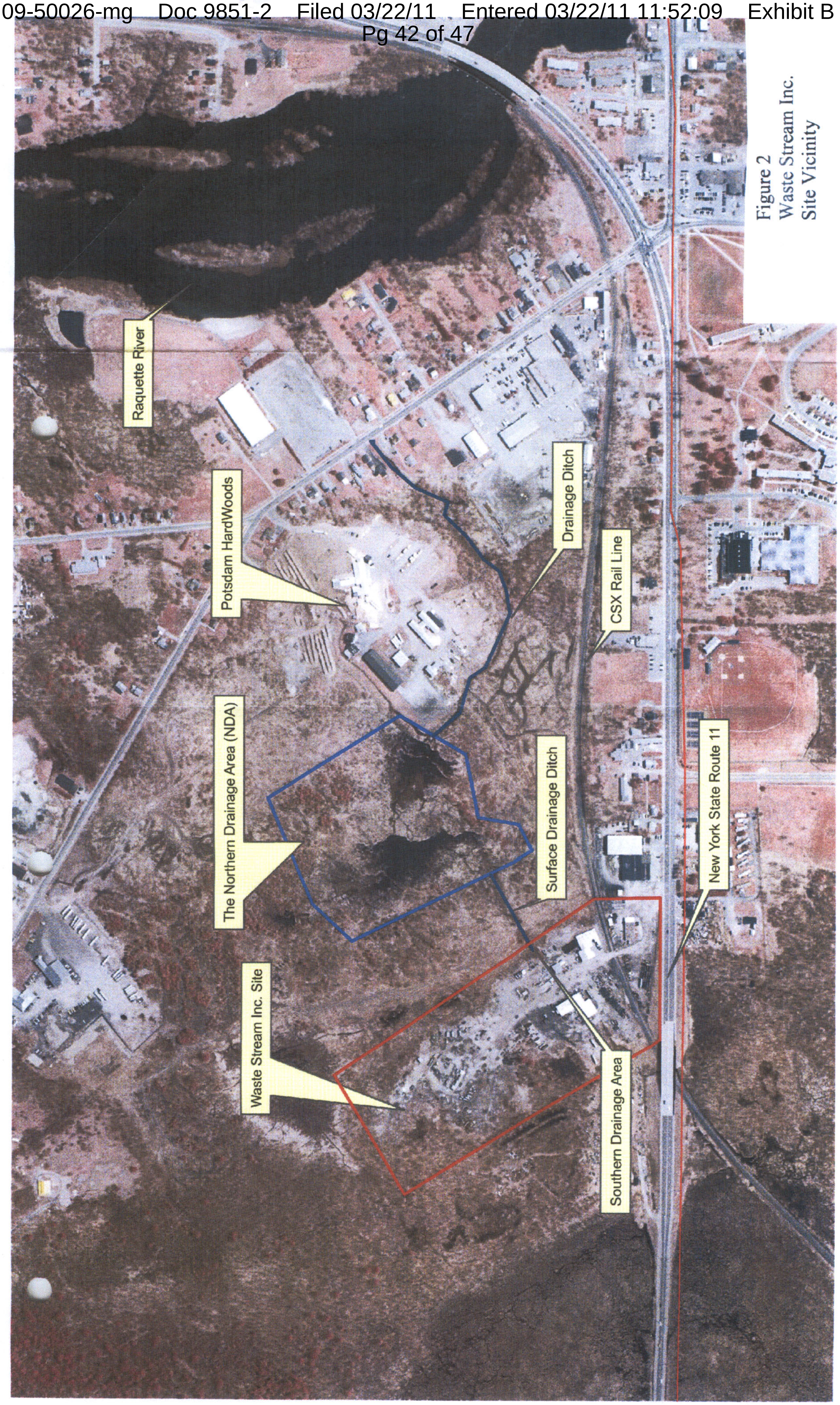
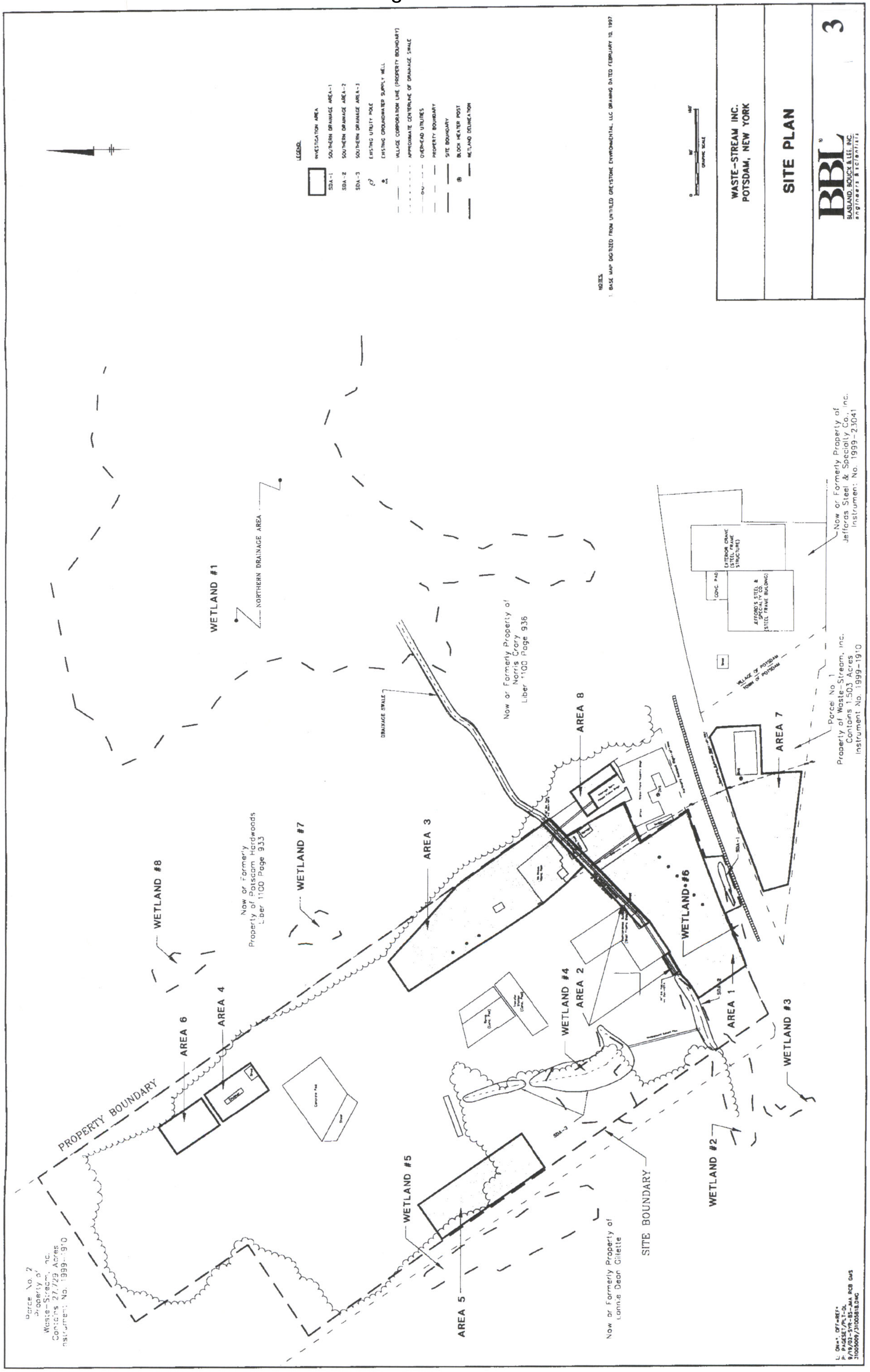
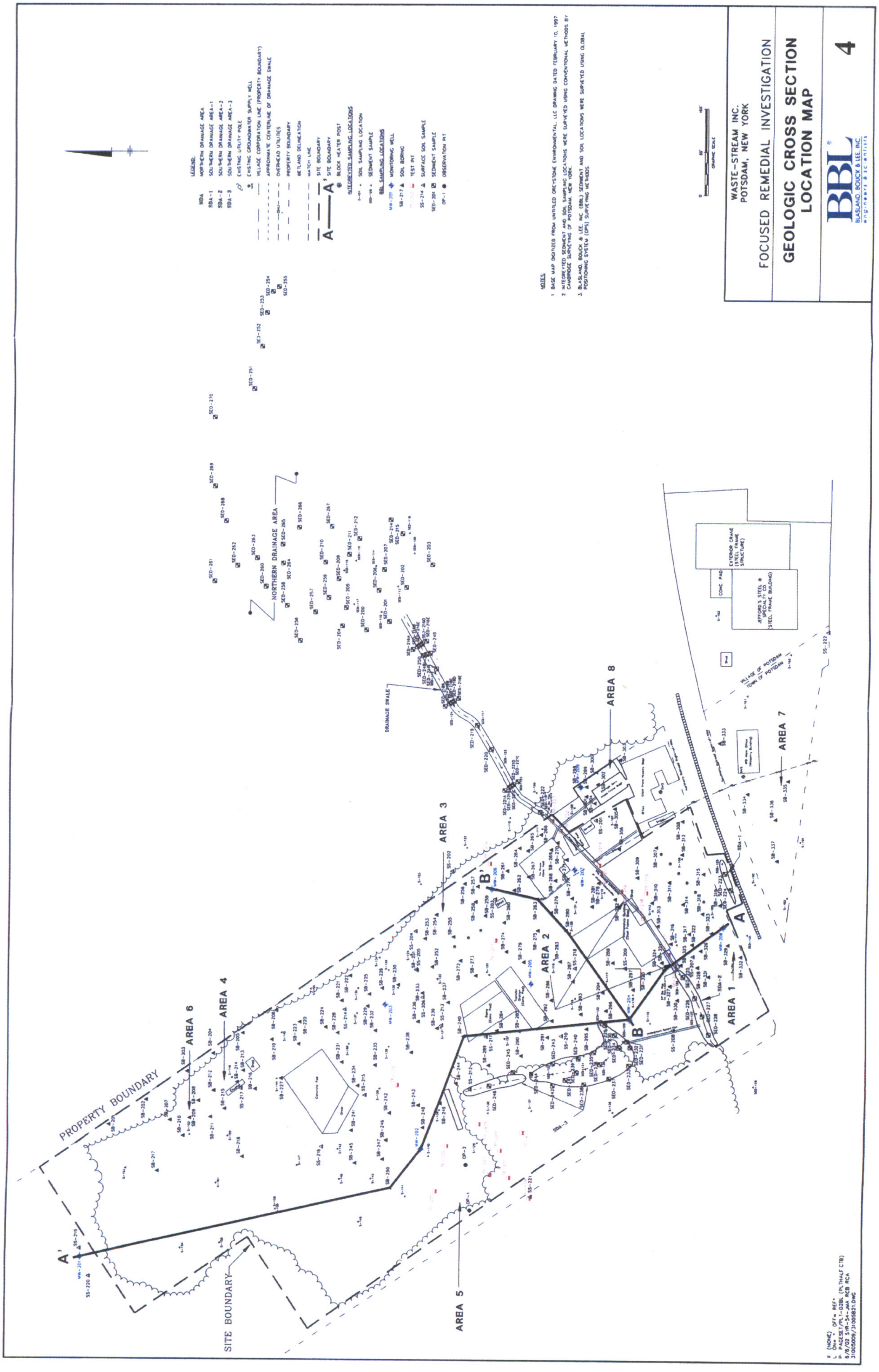
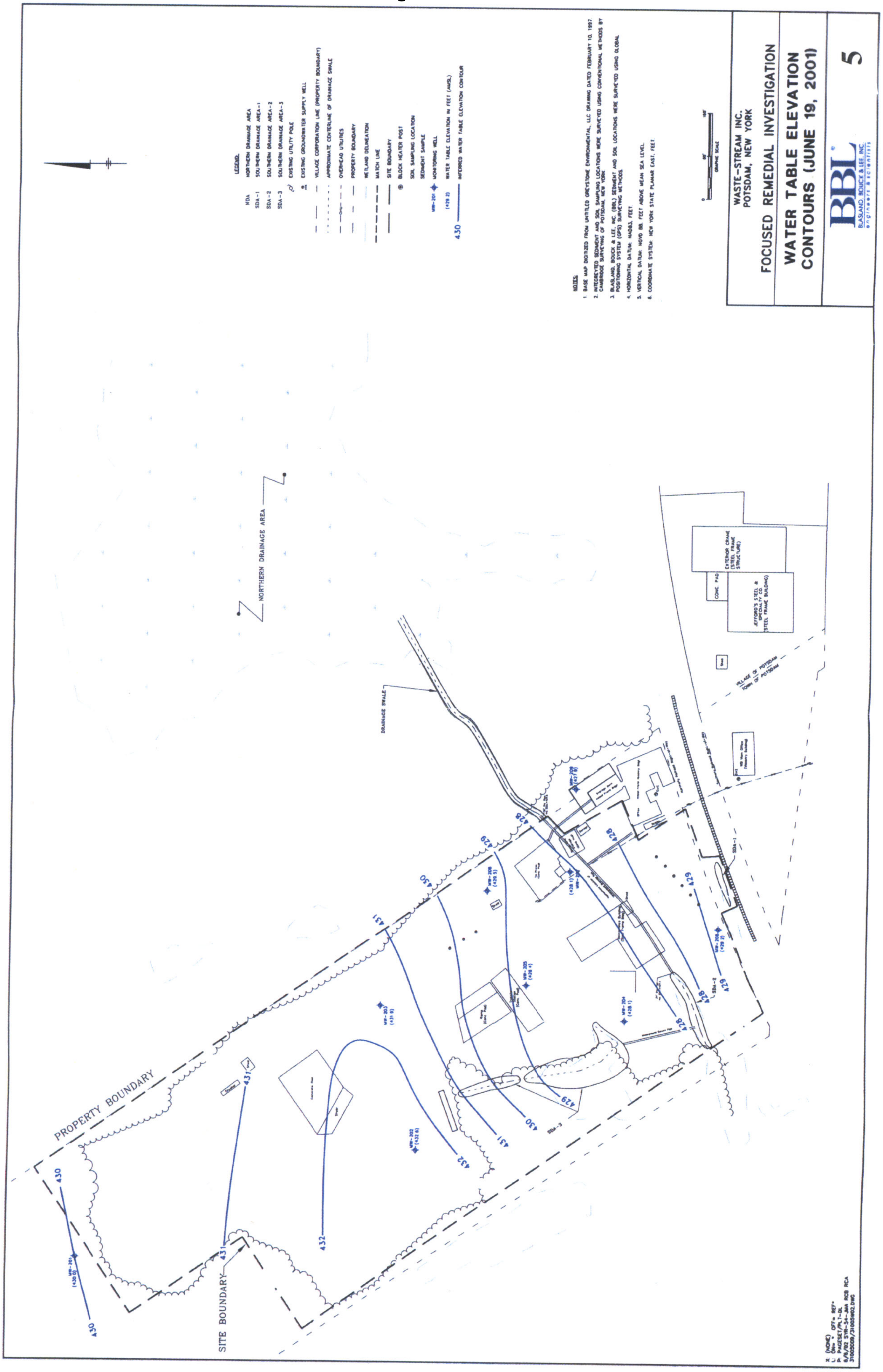
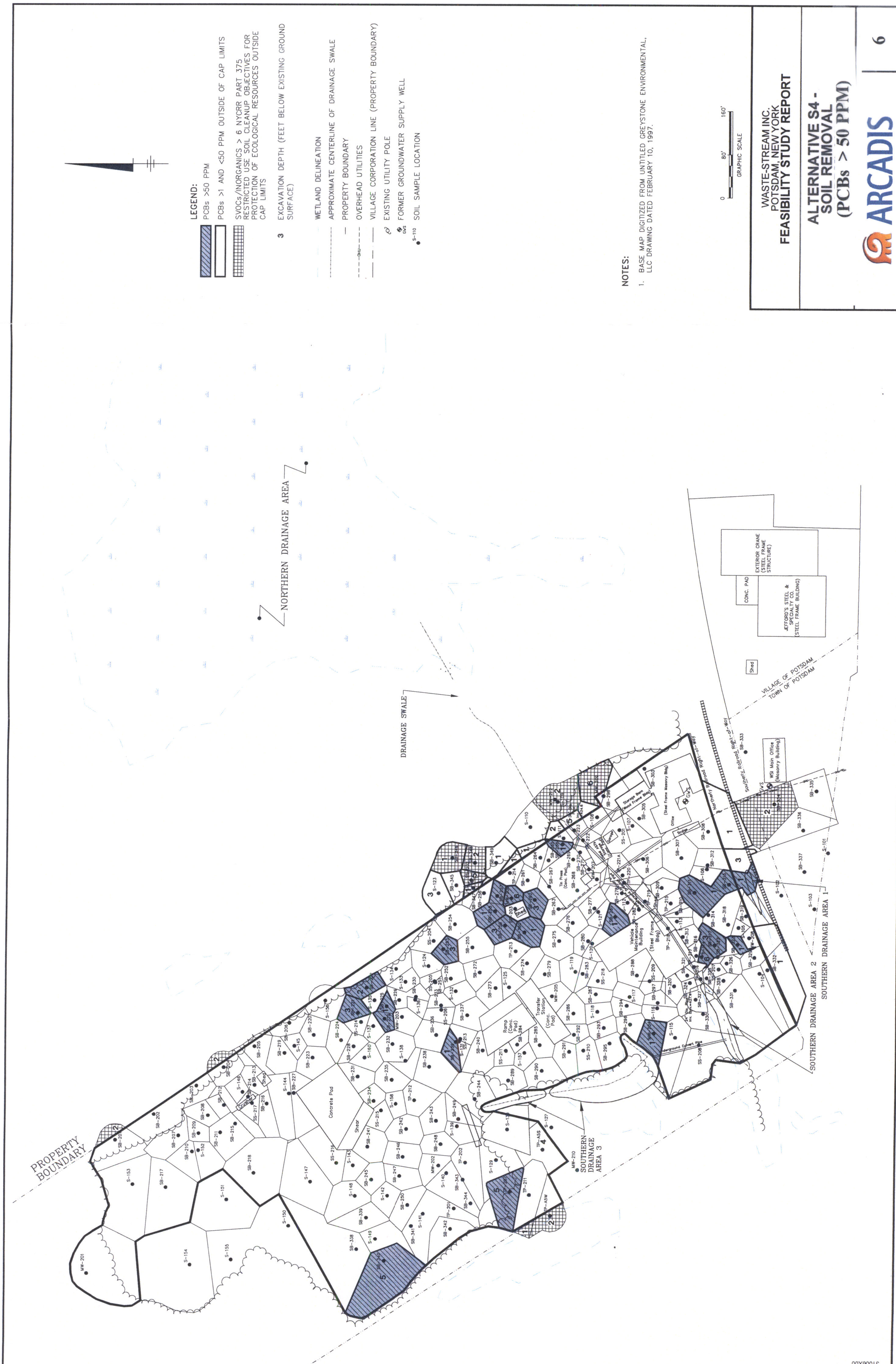


Figure 2
Waste Stream Inc.
Site Vicinity


WASTE-STREAM INC.
POTSDAM, NEW YORK
SITE PLAN
3
BBL
BLASLAND, BOUCK & LEE, INC.
NOTES:
1. BASE MAP DIGITIZED FROM UNTITLED GREYSTONE ENVIRONMENTAL, LLC DRAWING DATED FEBRUARY 10, 1997
LEGEND:
INVESTIGATION AREA
SOUTHERN DRAINAGE AREA-1
SOUTHERN DRAINAGE AREA-2
SOUTHERN DRAINAGE AREA-3
EXISTING UTILITY POLE
EXISTING GROUNDWATER SUPPLY WELL
VILLAGE CORPORATION LINE (PROPERTY BOUNDARY)
APPROXIMATE CENTERLINE OF DRAINAGE SWALE
OVERHEAD UTILITIES
PROPERTY BOUNDARY
SITE BOUNDARY
BLOCK HEATER POST
WETLAND DELINEATION
GRAPHIC SCALE
WETLAND #1
NORTHERN DRAINAGE AREA
WETLAND #2
WETLAND #3
WETLAND #4
WETLAND #5
WETLAND #6
WETLAND #7
WETLAND #8
AREA 1
AREA 2
AREA 3
AREA 4
AREA 5
AREA 6
AREA 7
AREA 8
PROPERTY BOUNDARY
SITE BOUNDARY
DRAINAGE SWALE
Now or Formerly Property of Norris Crary Liber 1100 Page 936
Now or Formerly Property of Potsdam Hardwoods Liber 1100 Page 933
Now or Formerly Property of Jeffords Steel & Specialty Co., Inc. Instrument No. 1999-23041
Parcel No. 1 Property of Waste-Stream, Inc. Contains 1.503 Acres Instrument No. 1999-1910
Parcel No. 2 Property of Waste-Stream, Inc. Contains 27.729 Acres Instrument No. 1999-1910
Now or Formerly Property of Lonnie Dean Gilette
VILLAGE OF POTSDAM
TOWN OF POTSDAM
JEFFORDS STEEL & SPECIALTY CO. (STEEL FRAME BUILDING)
EXTERIOR CRANE (STEEL FRAME STRUCTURE)
CONC. PAD
SDA-1
SDA-2
SDA-3


WASTE-STREAM INC.
POTSDAM, NEW YORK
FOCUSED REMEDIAL INVESTIGATION
GEOLOGIC CROSS SECTION
LOCATION MAP
4
BBL
BLASLAND, BOUCK & LEE, INC.
NORTHERN DRAINAGE AREA
DRAINAGE SWALE
PROPERTY BOUNDARY
SITE BOUNDARY
AREA 1
AREA 2
AREA 3
AREA 4
AREA 5
AREA 6
AREA 7
AREA 8


NOTES:
1. BASE MAP DIGITIZED FROM UNTITLED GREYSTONE ENVIRONMENTAL, LLC DRAWING DATED FEBRUARY 10, 1997.
2. INTEGREYTED SEDIMENT AND SOIL SAMPLING LOCATIONS WERE SURVEYED USING CONVENTIONAL METHODS BY CAMBRIDGE SURVEYING OF POTSDAM, NEW YORK
3. BLASLAND, BOUCK & LEE, INC. (BBL) SEDIMENT AND SOIL LOCATIONS WERE SURVEYED USING GLOBAL POSITIONING SYSTEM (GPS) SURVEYING METHODS
4. HORIZONTAL DATUM: NAD83, FEET.
5. VERTICAL DATUM: NGVD 88, FEET ABOVE MEAN SEA LEVEL.
6. COORDINATE SYSTEM: NEW YORK STATE PLANAR EAST, FEET.
GRAPHIC SCALE
WASTE-STREAM INC.
POTSDAM, NEW YORK
FOCUSED REMEDIAL INVESTIGATION
WATER TABLE ELEVATION CONTOURS (JUNE 19, 2001)
BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists
5
NORTHERN DRAINAGE AREA
DRAINAGE SWALE
PROPERTY BOUNDARY
SITE BOUNDARY
430
431
432
429
428


LEGEND:
PCBs >50 PPM
PCBs >1 AND <50 PPM OUTSIDE OF CAP LIMITS
SVOCs/INORGANICS > 6 NYCRR PART 375 RESTRICTED USE SOIL CLEANUP OBJECTIVES FOR PROTECTION OF ECOLOGICAL RESOURCES OUTSIDE CAP LIMITS
3 EXCAVATION DEPTH (FEET BELOW EXISTING GROUND SURFACE)
WETLAND DELINEATION
APPROXIMATE CENTERLINE OF DRAINAGE SWALE
PROPERTY BOUNDARY
OVERHEAD UTILITIES
VILLAGE CORPORATION LINE (PROPERTY BOUNDARY)
EXISTING UTILITY POLE
FORMER GROUNDWATER SUPPLY WELL
SOIL SAMPLE LOCATION
NOTES:
1. BASE MAP DIGITIZED FROM UNTITLED GREYSTONE ENVIRONMENTAL, LLC DRAWING DATED FEBRUARY 10, 1997.
0 80' 160'
GRAPHIC SCALE
NORTHERN DRAINAGE AREA
DRAINAGE SWALE
PROPERTY BOUNDARY
SOUTHERN DRAINAGE AREA 1
SOUTHERN DRAINAGE AREA 2
SOUTHERN DRAINAGE AREA 3
VILLAGE OF POTSDAM
TOWN OF POTSDAM
WASTE-STREAM INC.
POTSDAM, NEW YORK
FEASIBILITY STUDY REPORT
ALTERNATIVE S4 - SOIL REMOVAL (PCBs > 50 PPM)
ARCADIS
6


LEGEND:
WETLAND DELINEATION
APPROXIMATE CENTERLINE OF DRAINAGE SWALE
PROPERTY BOUNDARY
OVERHEAD UTILITIES
VILLAGE CORPORATION LINE (PROPERTY BOUNDARY)
EXISTING UTILITY POLE
FORMER GROUNDWATER SUPPLY WELL
SEDIMENT SAMPLE LOCATION
PCBs >1 PPM AND <50 PPM
PCBs >50 PPM
NOTE: BASE MAP DIGITIZED FROM UNTITLED GREYSTONE ENVIRONMENTAL, LLC DRAWING DATED FEBRUARY 10, 1997.
GRAPHIC SCALE
NORTHERN DRAINAGE AREA
DRAINAGE SWALE
SOUTHERN DRAINAGE AREA 1
SOUTHERN DRAINAGE AREA 2
SOUTHERN DRAINAGE AREA 3
PROPERTY BOUNDARY
VILLAGE OF POTSDAM
TOWN OF POTSDAM
WASTE-STREAM INC.
POTSDAM, NEW YORK
FEASIBILITY STUDY REPORT
ALTERNATIVES SD4 -
SEDIMENT REMOVAL (PCBs >1 PPM)
ARCADIS
7